



Service Manual



# Service Manual

## KE820



Model : KE820

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## REVISED HISTORY

Editor	Date	Issue	Contents of Changes	S/W Version
T. K. CHOI	2006/03/29	0.1		
T. K. CHOI	2006/07/06	0.2		

The information in this manual is subject to change without notice and should not be construed as a commitment by LGE Inc. Furthermore, LGE Inc. reserves the right, without notice, to make changes to equipment design as advances in engineering and manufacturing methods warrant.

This manual provides the information necessary to install, program, operate and maintain the KE820/KG99.

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# 1. INTRODUCTION

## 1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of the KE820/KG99.

## 1.2 Regulatory Information

### A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges you're your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. LGE does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it. LGE will not be responsible for any charges that result from such unauthorized use.

### B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

### C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the KE820/KG99 or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

### D. Maintenance Limitations

Maintenance limitations on the KE820/KG99 must be performed only at the LGE or its authorized agents. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

# 1. INTRODUCTION

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## **E. Notice of Radiated Emissions**

The KE820/KG99 complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

## **F. Pictures**

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

## **G. Interference and Attenuation**

An KE820/KG99 may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

## **H. Electrostatic Sensitive Devices**

### **ATTENTION**

Boards, which contains Electrostatic Sensitive Device(ESD), are indicated by the sign.

Following information is ESD handling: Service personnel should ground themselves by using a wrist strap when exchange system boards.

When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded. Use a suitable, grounded soldering iron. Keep sensitive parts in these protective packages until these are used. When returning system boards or parts such as EEPROM to the factory, use the protective package as described.

### 1.3 ABBREVIATION

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current - Constant Voltage
CLA	Cigar Lighter Adapter
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milli-watt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
EGPRS	Enhanced General Packet Radio Service
EL	Electroluminescence
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPB	General Purpose Interface Bus
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output

## 1. INTRODUCTION

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LED	Light Emitting Diode
LGE	LG Electronics
OPLL	Offset Phase Locked Loop
PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol
8PSK	8 Phase Shift Keying

## 2. PERFORMANCE

### 2.1 H/W Features

Item	Feature	Comment
Standard Battery	Li-ion, 750mAh	
AVG TCVR Current	270mA typ	@PL5
Standby Current	2.5 mA typ	@PP9
Talk time	3 hours (GSM TX Level 7)	
Standby time	300 hours (Paging Period:9, RSSI: -85dBm)	
Charging time	Under 3 hours	
RX Sensitivity	EGSM : -105dBm↓, DCS/PCS : -105dBm ↓	
TX output power	EGSM : 32.5dBm (@PL 5) DCS/PCS: 30dBm (@PL 0)	
GPRS compatibility	Class 10	
SIM card type	3V Small	
Display	220 X 176 pixels, 2 inch wide, 265K color, TFT	
Status Indicator	Soft icons Key Pad 0 ~ 9, #, *, Navigation Key, Send, End, 2 Function Key END/PWR, MP3, AF/Camera double action Volume Up, Volume Down	
ANT	Built in antenna	
EAR Phone Jack	18pin multi port Headset jack with Remote controller	
PC Synchronization	Yes	
Speech coding	HR/EFR/FR/AMR	
Data and Fax	Yes	
Vibrator	Yes	
Buzzer	No	
Voice Recoding	Yes	
C-Mic	Yes	
Receiver	Yes	
Travel Adapter	Yes	
Options	Bluetooth hands-free kit, Data Kit	

## 2. PERFORMANCE

### 2.2 Technical specification

Item	Description	Specification					
1	Frequency Band	<b>GSM900</b> • TX: 890 + 0.2 x n MHz • RX: 935 + 0.2 x n MHz ( n = 1 ~ 124 ) <b>EGSM</b> • TX: 890 + 0.2 x (n-1024) MHz • RX: 935 + 0.2 x (n-1024) MHz ( n = 975 ~ 1023 ) <b>DCS1800</b> • TX: 1710 + ( n-511 ) x 0.2 MHz ( n = 512 ~ 885) • RX: TX + 80MHz <b>PCS1900</b> • TX: 1850.2 + ( n-512 ) x 0.2 MHz ( n = 512 ~ 810) • RX: TX + 80MHz					
2	Phase Error	RMS < 5 degrees Peak < 20 degrees					
3	Frequency Error	< 0.1ppm					
4	Power Level	<b>GSM900/EGSM</b>					
		Level	Power	Toler.	Level	Power	Toler.
		5	33 dBm	±2dB	13	17 dBm	±3dB
		6	31 dBm	±3dB	14	15 dBm	±3dB
		7	29 dBm	±3dB	15	13 dBm	±3dB
		8	27 dBm	±3dB	16	11 dBm	±5dB
		9	25 dBm	±3dB	17	9 dBm	±5dB
		10	23 dBm	±3dB	18	7 dBm	±5dB
		11	21 dBm	±3dB	19	5 dBm	±5dB
		12	19 dBm	±3dB			
		<b>DCS1800/PCS1900</b>					
		Level	Power	Toler.	Level	Power	Toler.
		0	30 dBm	±2dB	8	14 dBm	±3dB
		1	28 dBm	±3dB	9	12 dBm	±4dB
		2	26 dBm	±3dB	10	10 dBm	±4dB
		3	24 dBm	±3dB	11	8 dBm	±4dB
		4	22 dBm	±3dB	12	6 dBm	±4dB
		5	20 dBm	±3dB	13	4 dBm	±4dB
		6	18 dBm	±3dB	14	2 dBm	±5dB
7	16 dBm	±3dB	15	0 dBm	±5dB		

## 2. PERFORMANCE

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	<b>GSM900/EGSM</b>	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-63
		3,000~ <6,000	-65
		6,000	-71
		<b>DCS1800/PCS1900</b>	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-65
		3,000~ <6,000	-65
		6,000	-73
6	Output RF Spectrum (due to switching transient)	<b>GSM900/EGSM</b>	
		Offset from Carrier (kHz)	Max. (dBm)
		400	-19
		600	-21
		1,200	-21
		1,800	-24

## 2. PERFORMANCE

Item	Description	Specification		
6	Output RF Spectrum (due to switching transient)	<b>DCS1800/PCS1900</b>		
		Offset from Carrier (kHz).		Max. (dBm)
		400		-22
		600		-24
		1,200		-24
		1,800		-27
7	Spurious Emissions	Conduction, Emission Status		
8	Bit Error Ratio	<b>EGSM</b> BER (Class II) < 2.439% @-102dBm <b>DCS1800/PCS1900</b> BER (Class II) < 2.439% @-100dBm		
9	Rx Level Report accuracy	$\pm 3$ dB		
10	SLR	$8 \pm 3$ dB		
11	Sending Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	0	-12
		1,000	0	-6
		2,000	4	-6
		3,000	4	-6
		3,400	4	-9
		4,000	0	-
12	RLR	$2 \pm 3$ dB		
13	Receiving Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	2	-7
		500	*	-5
		1,000	0	-5
		3,000	2	-5
		3,400	2	-10
		4,000	2	
		* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.		

## 2. PERFORMANCE

Item	Description	Specification	
14	STMR	13 ±5 dB	
15	Stability Margin	> 6 dB	
16	Distortion	dB to ARL (dB)	Level Ratio (dB)
		-35	17.5
		-30	22.5
		-20	30.7
		-10	33.3
		0	33.7
		7	31.7
		10	25.5
17	Side Tone Distortion	Three stage distortion < 10%	
18	<Change> System frequency (26 MHz) tolerance	≤ 2.5ppm	
19	<Change>32.768KHz tolerance	≤ 30ppm	
20	Power consumption	Standby - Normal ≤ 3 mA(@PP9)	
21	Talk Time	EGSM/Lvl 7 (Battery Capacity 750mA):180 min EGSM/Lvl12(Battery Capacity 750 mA):320min	
22	Standby Time	Under conditions, at least 300 hours: 1. Brand new and full 750mAh battery 2. Full charge, no receive/send and keep GSM in idle mode. 3. Broadcast set off. 4. Signal strength display set at 3 level above. 5. Backlight of phone set off.	
23	Ringer Volume	At least 65 dB under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm	
24	Charge Current	Fast Charge : < 550 mA Slow Charge: < 120 mA	
25	Antenna Display	Antenna Bar Number	Power
		5	-85 dBm ~
		4	-90 dBm ~ -86 dBm
		3	-95 dBm ~ -91 dBm
		2	-100 dBm ~ -96 dBm
		1	-105 dBm ~ -101 dBm
		0	~ -105 dBm

## 2. PERFORMANCE

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Item	Description	Specification
26	Battery Indicator	Battery Bar Number      Voltage( $\pm 0.05V$ )
		4      3.86V~4.2V
		3      3.75V~3.85V
		2      3.75V~3.69V
		1      3.69V~3.62V
		0      3.62V~
27	Low Voltage Warning	3.62V↓ $\pm 0.05V$ (Call)
		3.50V↓ $\pm 0.05V$ (Standby)
28	Forced shut down Voltage	3.35 $\pm$ 0.05 V
29	Battery Type	Li-ion Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 750mAh
30	Travel Charger	Switching-mode charger Input: 100 ~ 240 V, 50/60Hz Out put: 4.8, 0.9A

## 2. PERFORMANCE

\* EDGE RF Specification (Option: KG99 is not serviced for "EDGE mode")

Item	Description	Specification					
1	RMS EVM	$\leq 9\%$					
2	Peak EVM	$\leq 30\%$					
3	95 <sup>th</sup> Percentile EVM	$\leq 15\%$					
4	Origin Offset Suppression	$\geq 30\text{dB}$					
5	Power Level	<b>GSM900/EGSM</b>					
		Level	Power	Toler.	Level	Power	Toler.
		5	27dBm	$\pm 3\text{dB}$	13	17dBm	$\pm 3\text{dB}$
		6	27dBm	$\pm 3\text{dB}$	14	15dBm	$\pm 3\text{dB}$
		7	27dBm	$\pm 3\text{dB}$	15	13dBm	$\pm 3\text{dB}$
		8	27dBm	$\pm 3\text{dB}$	16	11dBm	$\pm 5\text{dB}$
		9	25dBm	$\pm 3\text{dB}$	17	9dBm	$\pm 5\text{dB}$
		10	23dBm	$\pm 3\text{dB}$	18	7dBm	$\pm 5\text{dB}$
		11	21dBm	$\pm 3\text{dB}$	19	5dBm	$\pm 5\text{dB}$
		12	19dBm	$\pm 3\text{dB}$			
		<b>DCS1800, PCS1900</b>					
		Level	Power	Toler.	Level	Power	Toler.
		0	26dBm	$\pm 3\text{dB}$	8	14 dBm	$\pm 3\text{dB}$
		1	26dBm	$\pm 3\text{dB}$	9	12 dBm	$\pm 4\text{dB}$
		2	26dBm	$\pm 3\text{dB}$	10	10 dBm	$\pm 4\text{dB}$
		3	24 dBm	$\pm 3\text{dB}$	11	8 dBm	$\pm 4\text{dB}$
		4	22 dBm	$\pm 3\text{dB}$	12	6 dBm	$\pm 4\text{dB}$
		5	20 dBm	$\pm 3\text{dB}$	13	4 dBm	$\pm 4\text{dB}$
		6	18 dBm	$\pm 3\text{dB}$	14	2 dBm	$\pm 5\text{dB}$
		7	16 dBm	$\pm 3\text{dB}$	15	0 dBm	$\pm 5\text{dB}$
6	Output RF Spectrum (due to modulation)	<b>GSM900/EGSM</b>					
		Offset from carrier(kHz)			Max. dBc		
		100			+0.5		
		200			-30		
		250			-33		
		400			-54		
		600~<1,200			-60		
		1,200~<1,800			-60		
		1,800~<3,000			-63		
		3,000~<6,000			-65		
		6,000			-71		

## 2. PERFORMANCE

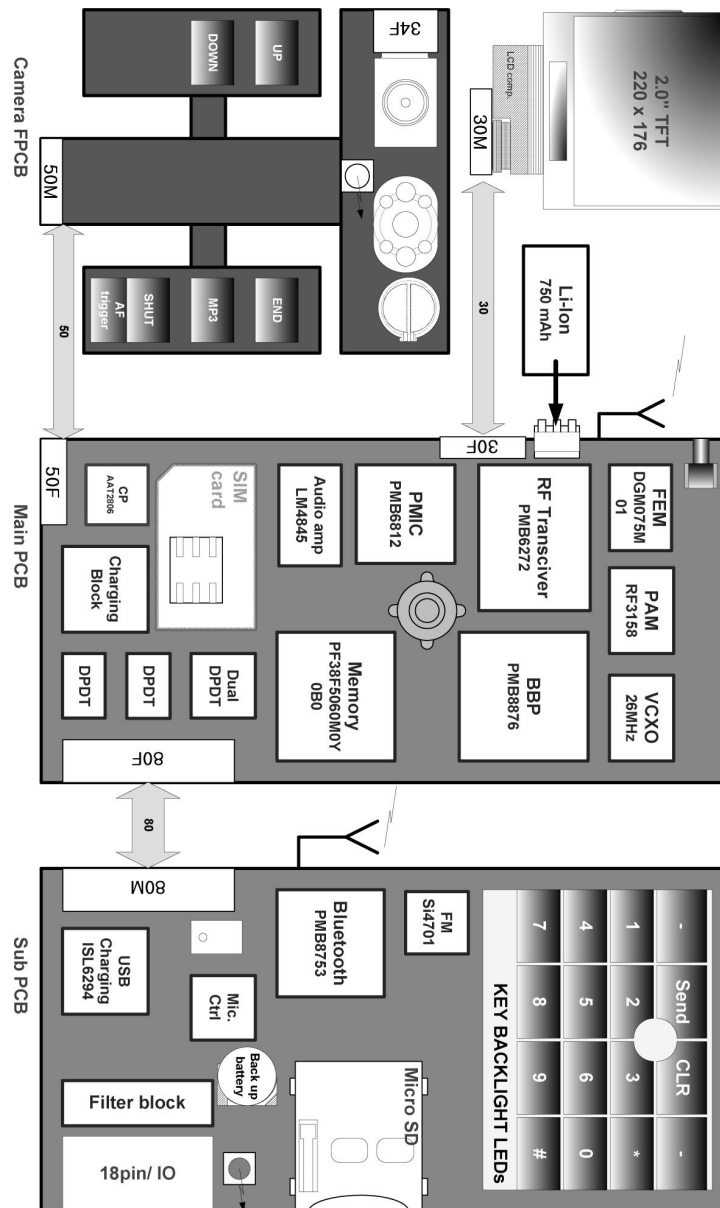
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Item	Description	Specification	
6	Output RF Spectrum (due to modulation)	<b>DCS1800, PCS1900</b>	
		Offset from carrier(kHz)	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-54
		600~<1,200	-60
		1,200~<1,800	-60
		1,800~<3,000	-63
		3,000~<6,000	-65
		6,000	-71
7	Output RF Spectrum (due to switching transient)	<b>GSM900/EGSM</b>	
		Offset from carrier(kHz)	Max. dBm
		400	-23
		600	-26
		1,200	-27
		1,800	--30
		<b>DCS1800, PCS1900</b>	
		Offset from carrier(kHz)	Max. dBm
		400	-23
		600	-26
		1,200	-27
		1,800	-30

### 3. TECHNICAL BRIEF

## Baseband circuit

### 3.1 KE820 / KG99 Component Block diagram.



**Figure 1 KE820/KG99 Hardware architecture**

KE820/KG99 is composed with 3 different PCB part such as main PCB, sub PCB and FPCB.

### 3. TECHNICAL BRIEF

The functional component arrangement is mentioned below diagram.

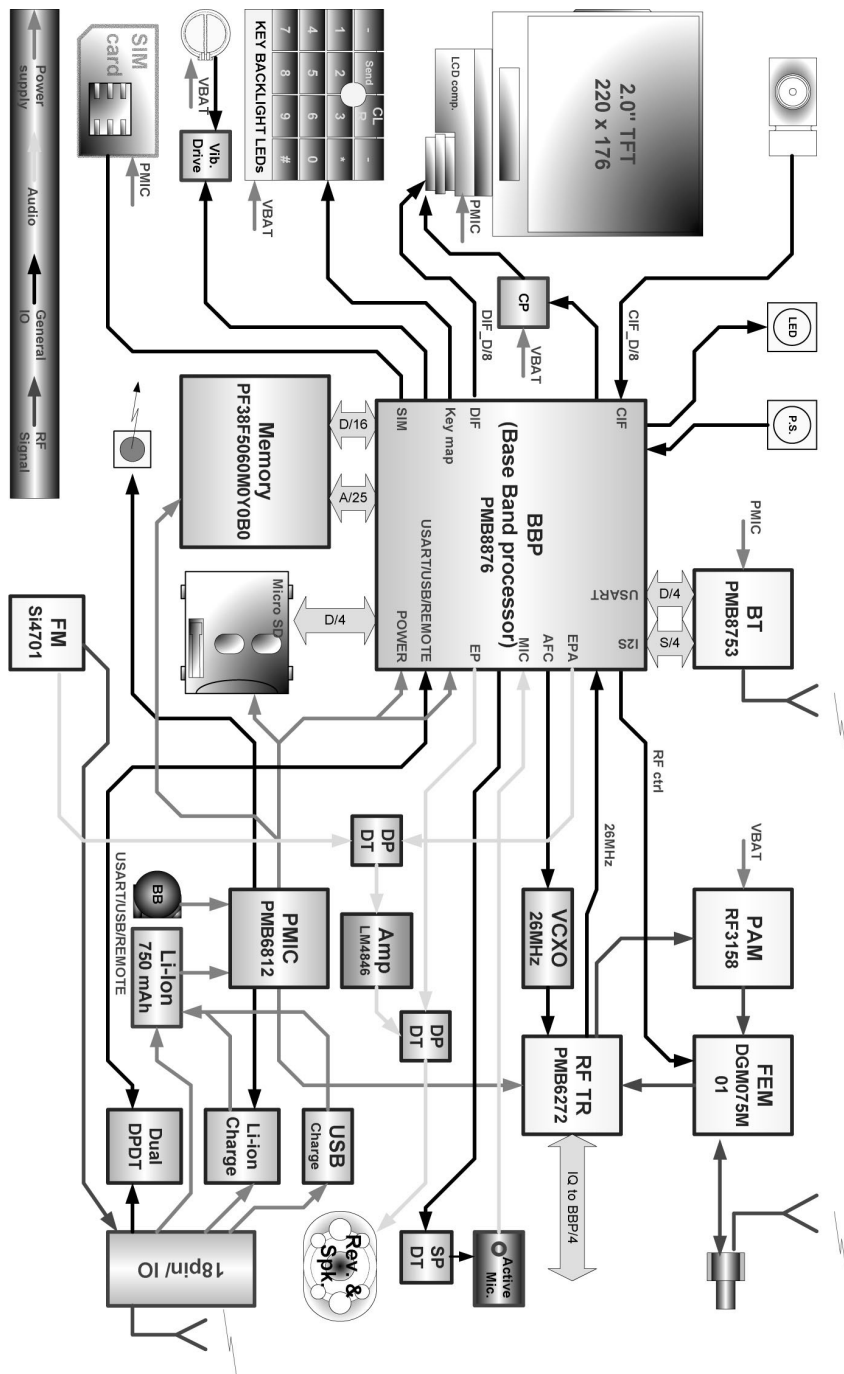


Figure 2 KE820/KG99 Functional block diagram

### 3.2 Baseband Processor (BBP) Introduction

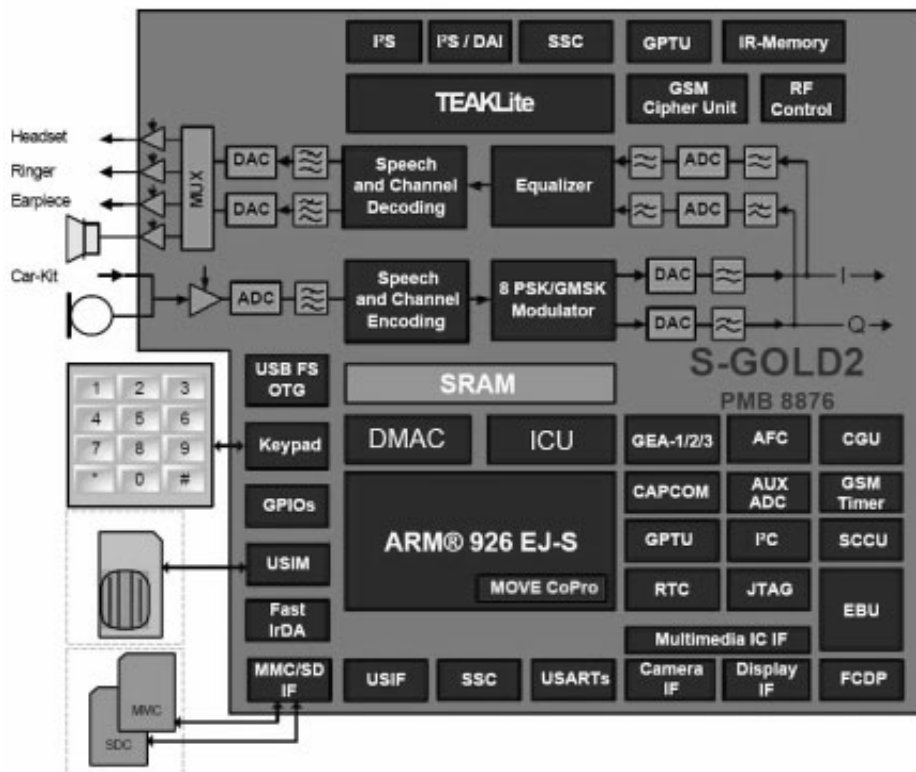


Figure 3. Top level block diagram of the S-GOLD2™ (PMB8876)

#### 3.2.1 General Description

S-GOLD2™ is a GSM/EDGE single chip mixed signal Baseband IC containing all analog and digital functionality of a cellular radio. Additionally S-GOLD2™ Provides multimedia extensions such as camera, software MIDI, MP3 sound. It is designed as a single chip solution, integrating the digital and mixed signal portions of the base band in 0.13um, 1.5V technology.

The chip will fully support the FR, EFR, HR and AMR-NB vocoding.

S-GOLD2™ support multi-slot operation modes HSCSD (up to class 10), GPRS for high speed data application (up to class 12) and EGPRS (up to class 12) without additional external hardware.

## 3. TECHNICAL BRIEF

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### 3.2.2 General Description

- Processing core  
ARM926EJ-S 32 bit processor core for controller functions. The ARM926EJ-S includes an MMU, and the Jazelle Java extension for Java acceleration.
  - TEAKLite DSP core
- ARM-Memory
  - 32k Byte Boot ROM on the AHB
  - 96k Byte SRAM on the AHB, flexibly usable as program or data RAM
  - 16k Byte Cache for Program (internal)
  - 8k Byte tightly coupled memory for Program(internal)
  - 8k Byte Cache for Data(internal)
  - 8k Byte tightly coupled memory for Data(internal)
- DSP-Memory
  - 104K x 16bit Program ROM
  - 8k x 16bit Program RAM
  - 60k x 16bit Data ROM
  - 37k x 16bit Data RAM
  - Incremental Redundancy(IR) Memory of 35904 words of 16bit
- Shared Memory Block  
1.5K x 32bit Shared RAM(dual ported) between controller system and TEAKLite.
- Controller Bus system  
The processor cores and their peripherals are connected by powerful buses. Multi-layer AHB for connecting the ARM and the other master capable building blocks with the internal and external memories and with the peripheral buses.
- Clock system  
The clock system allows widely independent selection of frequencies for the essential parts of the S-GOLD2. Thus power consumption and performance can be optimized for each application.
- Functional Hardware block
  - CPU and DSP Timers
  - MOVE coprocessor performing motion estimation for video encoding algorithms (H.263, MPEG-4)
  - Programmable PLL with additional phase shifters for system clock generation
  - GSM Timer Module that off-loads the CPU from radio channel timing
  - GMSK / 8-PSK Modulator according to GSM-standard 05.04 (5/2000)
  - GMSK Modulator: gauss-filter with  $B \cdot T = 0.3$
  - EDGE Modulator: 8PSK-modulation with linearized GMSK-Pulse-Filter
  - Hardware accelerators for equalizer and channel decoding.
  - Incremental Redundancy memory for EDGE class 12 support
  - A5/1, A5/2, A5/3 Cipher unit
  - GEA1, GEA2, GEA3 Cipher Unit to support GPRS data transmission

- Advanced static and dynamic power management features including TDMA-Frame synchronous low power mode and enhanced CPU modes(idle and sleep modes)
- Pulse Number Modulation output for Automatic Frequency Correction(AFC)
- Serial RF Control interface: support of direct conversion RF
- A Universal Serial Interface(USIF) enabling asynchronous (UART) or synchronous (SPI) serial data transmission
- 1 Serial Synchronous SPI compatible interfaces in the controller domain
- 1 Serial Synchronous SPI compatible interface in the TEAKLite domain
- 2 USART with autobaud detection, hardware flow control and integrated IrDA controller supporting IrDA's SIR standard (up to 115.2Kbps)
- A dedicated Fast IrDA Controller supporting IrDA's SIR, MIR and FIR standards (up to 4Mbps)
- I2C-bus interface (e.g. connection to S/M power)
- A fast display interface supporting serial and parallel interconnection
- An ITU-R BT.656 compatible Camera interface.
- Programmable clock output for a camera
- An multimedia/Secure Digital Card Interface (MMC/SD:SDIO capable)

#### 3.2.3. External Devices connected to memory interface

Table 1 Memory interface

Device	Name	Maker	Remark
FLASH	PF38F5060M0Y0B0	Intel	Synchronous / A synchronous
SDRAM	PF38F5060M0Y0B0	Intel	Synchronous 104MHz
LCD	NM200CNAA	NEODIS	8bit access 3times transmission
Melody IC	Not Used	S/W	Infineon Software CODEC

#### 3.2.4. RF Interface (T\_OUT)

S-Gold2 uses this interface to control RF IC and Peripherals. 13 signals are provided switch on/off RF ICs Periodically each TDMA frame.

Table 2 RF Interface Spec.

T_OUT		
Resource	Interconnection	Description
T_OUT0	TXON_PA	PAM Power on
T_OUT1	Other function	-
T_OUT2	PA_BAND	TX RF band select
T_OUT3	ANT_SW1	FEM control
T_OUT4	ANT_SW2	FEM control
T_OUT5	ANT_SW3	FEM control
T_OUT6	MODE	PAM Mode select

### 3. TECHNICAL BRIEF

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#### 3.2.5. USART Interface

KE820/KG99 have two UART Drivers as follow :

- USART1 : Hardware Flow Control / SW upgrade / Calibration
- USART2 : SW debug trace.

Table 3 USART Interface Spec.

USART_0(USART1)		
Resource	Name	Remark
USART0_TXD	TXD_0	Transmit Data
USART0_RXD	RXD_0	Receive Data
USART0_CTS	CTS_0	Clear To Send
USART0_RTS	RTS_0	Request To Send
	DSR	N.C.
USART_1(USART2)		
USART1_TXD	TX_DEBUG	Trace data tx
USART1_RXD	RX_DEBUG	Trace data rx
USART1_CTS	N.C.	N.C.
USART1_RTS	N.C.	N.C.

#### 3.2.6. ADC channel

BBP ADC block is composed of 7 external ADC channel. This block operates charging process and other related process by reading battery voltage and other analog values.

Table 4 S-Gold2 ADC channel usage

ADC channel		
Resource	Interconnection	Description
M0	BATT_TEMP	Battery temperature measure
M1	RF_TEMP	RF block temperature measure
M2	JACK_TYPE	Accessory type detect
M7	H/W VERSION	S-Gold2 H/W version detect
M8	VSUPPLY	Battery supply voltage measure
M9	I_MONITOR	Current consumption measure
M10	REMOTE_ADC	Remote control key detect

### 3.2.7. GPIO map

Over a hundred allowable resources, KE820/KG99 is using as follows except dedicated to SIM and Memory. KE820/KG99 GPIO(General Purpose Input/Output) Map, describing application, I/O state, and enable level, is shown in below table.

Table 5 S-Gold2 GPIO pin Map

Port function	KE820 Net Name	Description
KEY MATRIX		
KP_IN0	KP_IN0	Refer to Key Matrix
KP_IN1	KP_IN1	Refer to Key Matrix
KP_IN2	KP_IN2	Refer to Key Matrix
KP_IN3	KP_IN3	Refer to Key Matrix
KP_IN4	KP_IN4	Refer to Key Matrix
KP_IN5	KP_IN5	Refer to Key Matrix
KP_OUT5	KP_OUT5	Refer to Key Matrix
KP_OUT0	KP_OUT0	Refer to Key Matrix
KP_OUT1	KP_OUT1	Refer to Key Matrix
KP_OUT2	KP_OUT2	Refer to Key Matrix
KP_OUT3	KP_OUT3	Refer to Key Matrix
USART_0		
USART0_RXD	RXD_0	UART0, RS232 Data
USART0_TXD	TXD_0	UART0, RS232 Data
USART0_RTS_N	CTS_0	UART0, RS232 RTS
USART0_CTS_N	RTS_0	UART0, RS232 CTS
CC1CC6IO	FM_INT	For FM Radio Interrupt
USART_1		
USART1_RXD	TX_DEBUG	For debugging
USART1_TXD	RX_DEBUG	For debugging
USART1_RTS_N	Not Use	
USART1_CTS_N	Not Use	
USB		
USB_DPLUS	USB_DP	USB data
USB_DMINUS	USB_DM	USB data

### 3. TECHNICAL BRIEF

MEMORY & CLK		
GPIO_20	F_DPD	For INTEL Memory
CLK32K	CLK32K	For FM Radio & BLUETOOTH
GPIO_22	Not Use	
CAMERA I/F		
CIF_D0	CIF_D(0)	Camera DATA[0]
CIF_D1	CIF_D(1)	Camera DATA[1]
CIF_D2	CIF_D(2)	Camera DATA[2]
CIF_D3	CIF_D(3)	Camera DATA[3]
CIF_D4	CIF_D(4)	Camera DATA[4]
CIF_D5	CIF_D(5)	Camera DATA[5]
CIF_D6	CIF_D(6)	Camera DATA[6]
CIF_D7	CIF_D(7)	Camera DATA[7]
CIF_PCLK	CIF_PCLK	Camera pixel clock
CIF_HSYNC	CIF_HS	Camera H sync
CIF_VSYNC	CIF_VS	Camera V sync
CLKOUT	CIF_MCLK	Camera main clock
CIF_PD	CIF_PD	Camera power down( active high)
CIF_RESET	CIF_RESET	Camera reset
LCD IF/		
DIF_D0	DIF_D(0)	LCD data[0]
DIF_D1	DIF_D(1)	LCD data[1]
DIF_D2	DIF_D(2)	LCD data[2]
DIF_D3	DIF_D(3)	LCD data[3]
DIF_D4	DIF_D(4)	LCD data[4]
DIF_D5	DIF_D(5)	LCD data[5]
DIF_D6	DIF_D(6)	LCD data[6]
DIF_D7	DIF_D(7)	LCD data[7]
DIF_CS1	DIF_CS	LCD chip select
GPIO_96	FM_BBP_SEL	Audio amp inuput select(High: FM sound, Low: BBP sound)
DIF_CD	DIF_CD	Command Data switch
DIF_WR	MM_WR	LCD Write
DIF_RD	MM_RD	LCD Read

### 3. TECHNICAL BRIEF

GPIO_99	CHG_LED_CTRL	Charging indicator LED control
GPIO_100	TF_PWR_EN	TransFlash card power enable(active High)
DIF_RESET1_GPIO	DIF_RESET1	LCD Reset
EINT6	REMOTE_INT	For Remote Control Headset
I2c		
I2C_SCL	SCL	For SM-Power, FM Radio, Audio AMP
I2C_SDA	SDA	"
PM_INT (EINT)	PM_INT	SM-Power interrupt
SIM CARD		
CC_IO	SIM_IO SIM CARD I/O	
CC_CLK	SIM_CLK	SIM CARD CLOCK
CC_RST	SIM_RST	SIM CARD RESET
I2S		
I2S2_CLK0	Not Use	
GPIO_102	_WP	Not Connected
I2S2_RX	Not Use	
I2S2_TX	Not Use	
I2S2_WA0	Not Use	
I2S2_WA1	Not Use	
EXTERNAL MEMORY		
MMCI_CMD	TF_CMD	For T-Flash
MMCI_DAT[0]	TF_DAT0	"
MMCI_CLK	TF_CLK	"
BT I/F		
USIF_TXD_MTSR	USIF_TXD	For Bluetooth
USIF_RXD_MRST	USIF_RXD	"
GPIO_109	_USB_EOC	USB End of charging detect(High: EOC, Low: charging)
GPIO_110	RPWRON	Remote power on detect (High: Remote , Low: Normal
GPIO_111	SPK_RCV_SEL	Audio pass select( high: Speaker, Low: Receiver)
I2S		
I2S1_CLK0	I2S1_CLK	For Bluetooth
GPTU0_0	FLASH_EN	For Camera Flash LED

### 3. TECHNICAL BRIEF

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I2S1_RX	I2S1_RX	For Bluetooth
I2S1_TX	I2S1_TX	"
I2S1_WA0	I2S1_WA0	"
MMC		
MMCI_DAT[1]	TF_DAT1	For T-Flash
MMCI_DAT[2]	TF_DAT2	"
MMCI_DAT[3]	TF_DAT3	"
AUDIO I/F		
EPN1	RCV_N	For Receiver
EPP1	RCV_P	"
EPPA1	BBP_SND_L	For Speaker
EPPA2	BBP_SND_R	For Speaker
MICN1	MIC1_N	For Mic
MICP1	MIC1_P	"
MICN2	MIC2_N	For Headset Mic
MICP2	MIC2_P	"
VMICP	VMICP	For Mic
VMICN	VMICN	"
ADC		
M_0	BAT_TEMP	Battery temperature detect
M_1	RF_TEMP	RF Power amp reference temperature detect
M_2	JACK_TYPE	For 18Pin Cable Type Detect
M_7		HW revision indication
M_8		Battery voltage measurement
M_9	I_MONITOR	Current consumption measurement
M_10	REMOTE_ADC	For Remote Control Headset Key detect with REMOTE_INT
JTAG		
TDO	TDO	For JTAG & ETM Interface
TDI	TDI	"
TMS	TMS	"
TCK	TCK	"
TRST_n	TRSTn	"
RTCK	RTCK	"

### 3. TECHNICAL BRIEF

ETM		
TRIG_IN	TRIG_IN	"
MON1	MON1	"
MON2	MON2	"
TRACESYNC	TRACESYNC	"
TRACECLK	TRACECLK	"
PIPESTAT[2]	PIPESTAT[2]	"
PIPESTAT[1]	PIPESTAT[1]	"
PIPESTAT[0]	PIPESTAT[0]	"
TRACEPKT[0]	TRACEPKT[0]	"
TRACEPKT[1]	TRACEPKT[1]	"
TRACEPKT[2]	TRACEPKT[2]	"
TRACEPKT[3]	TRACEPKT[3]	"
TRACEPKT[4]	TRACEPKT[4]	"
TRACEPKT[5]	TRACEPKT[5]	"
TRACEPKT[6]	TRACEPKT[6]	"
TRACEPKT[7]	TRACEPKT[7]	"
Data bus		
EBU_AD[0]	D(0)	Data bus[0]
EBU_AD[1]	D(1)	Data bus[1]
EBU_AD[2]	D(2)	Data bus[2]
EBU_AD[3]	D(3)	Data bus[3]
EBU_AD[4]	D(4)	Data bus[4]
EBU_AD[5]	D(5)	Data bus[5]
EBU_AD[6]	D(6)	Data bus[6]
EBU_AD[7]	D(7)	Data bus[7]
EBU_AD[8]	D(8)	Data bus[8]
EBU_AD[9]	D(9)	Data bus[9]
EBU_AD[10]	D(10)	Data bus[10]
EBU_AD[11]	D(11)	Data bus[11]
EBU_AD[12]	D(12)	Data bus[12]
EBU_AD[13]	D(13)	Data bus[13]
EBU_AD[14]	D(14)	Data bus[14]
EBU_AD[15]	D(15)	Data bus[15]
EBU_WR_n	_WR	Write strobe

### 3. TECHNICAL BRIEF

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EBU_RD_n	_RD	Read strobe
EBU_BC0_n	_BC0	
EBU_BC1_n	_BC1	
EBU_A[0]	A(0)	Address bus[0]
EBU_A[1]	A(1)	Address bus[1]
EBU_A[2]	A(2)	Address bus[2]
EBU_A[3]	A(3)	Address bus[3]
EBU_A[4]	A(4)	Address bus[4]
EBU_A[5]	A(5)	Address bus[5]
EBU_A[6]	A(6)	Address bus[6]
EBU_A[7]	A(7)	Address bus[7]
EBU_A[8]	A(8)	Address bus[8]
EBU_A[9]	A(9)	Address bus[9]
EBU_A[10]	A(10)	Address bus[10]
EBU_A[11]	A(11)	Address bus[11]
EBU_A[12]	A(12)	Address bus[12]
EBU_A[13]	A(13)	Address bus[13]
EBU_A[14]	A(14)	Address bus[14]
EBU_A[15]	A(15)	Address bus[15]
EBU_A[16]	A(16)	Address bus[16]
EBU_A[17]	A(17)	Address bus[17]
EBU_A[18]	A(18)	Address bus[18]
EBU_A[19]	A(19)	Address bus[19]
EBU_A[20]	A(20)	Address bus[20]
EBU_A[21]	A(21)	Address bus[21]
EBU_A[22]	A(22)	Address bus[22]
EBU_A[23]	A(23)	Address bus[23]
EBU_A[24]	A(24)	Address bus[24]
EBU_CS0_n	_FLASH1_CS	Flash ROM chip select
EBU_CS1_n	_RAM_CS	SDRAM Chip select
EBU_CS2_n	_FLASH2_CS	Not used
EBU_CS3_n	_CS3	Not used
EBU_ADV_n	_ADV	
EBU_RAS_n	_RAS	
EBU_CAS_n	_CAS	

### 3. TECHNICAL BRIEF

EBU_WAIT_n	_WAIT	
EBU_SDCLKO	SDCLKO	
EBU_SDCLKI	SDCLKI	
EBU_BFCLKO	BFCLKO	
EBU_BFCLKI	BFCLKI	
EBU_CKE	CKE	
SSC1_SCLK	F_DPD	
T_OUT0	TXON_PA	RF Power amp turn on
GPIO_44	VIBRATOR_EN	Vibrator enable(High: enable, Low:disable)
T_OUT2	PA_BAND	RF band select
T_OUT3	ANT_SW1	RF FEM control signal 1
T_OUT4	ANT_SW2	RF FEM control signal 2
EINT3	ANT_SW3	RF FEM control signal 3
T_OUT6	MODE	For RF
GPIO_50	KP_OUT(4)	Key pad
GPIO_51	AU_PWR_EN	Audio amp power enable( active high)
CC1CC3IO	LCD BACKLIGHT	LCD Backlight Control
GPIO_53	JACK_DETECT	For Headset Detect(High: unplugged, Low: plugged)
GPIO_54	_FM_RESET	FM Radio chip reset
GPIO_55	AF_PWR_EN	Auto focus power enable( active high)
RF_STR0	EN	RF Transceiver chip enable
GPIO_57	TF_DETECT	Micro SD card detect (High: inserted, Low: ejected)
RF_DATA	DA	RF Transceiver chip data
RF_CLK	CLK	RF Transceiver chip clock
System port		
AFC	AFC	Automatic Frequency control DAC output for 26MHz VCTCXO
CLKOUT0 [<=26MHz]	Not Use	
F26M	26MHZ_MCLK	Baseband processor PLL input Main clock

### 3. TECHNICAL BRIEF

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F32K		Sleep crystal 32.768KHz
OSC32K		Sleep crystal 32.768KHz
RESET_n	_RESET	Baseband processor reset
CC1CC1IO	TRIG_OUT	For JTAG & ETM Interface
RTC_OUT	RTC_OUT	Wake up signal to alarm (High; wake up, Low: Power off)
VCXO_EN	VCXO_EN	26MHz clock enable
DSP		
DSPIN0	_BT_RESET	Bluetooth chip reset
GPIO_62	Not Use	
GPIO_63	_SIM_EN	SIM card power enable

### 3.3 Power management IC

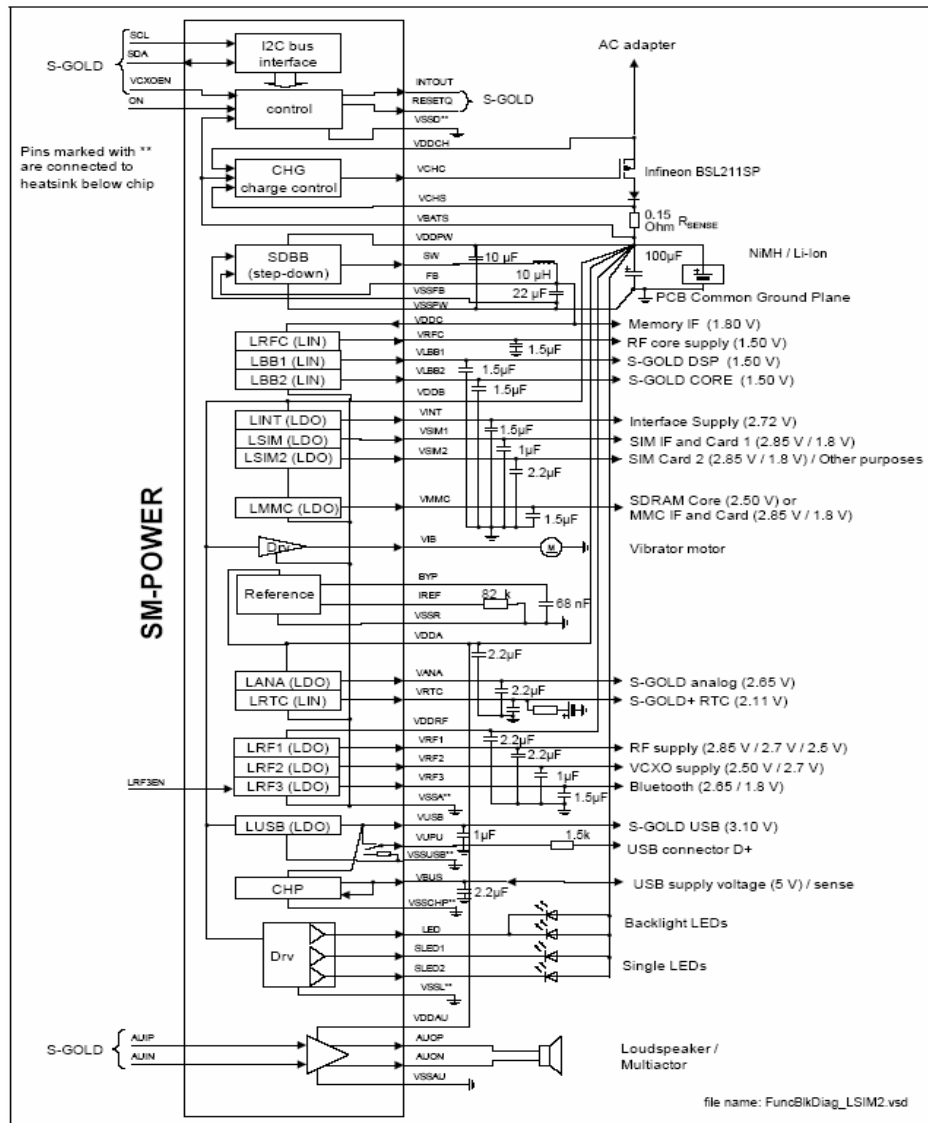
#### 3.3.1. General Description

SM-POWER is a highly integrated Power and Battery Management IC for mobile handsets. It has been specially designed for usage with S-Gold2. Although optimized for usage with the Infineon S-GOLD baseband device it is suitable for the S-GOLDlite and the E-GOLD+ baseband devices as well. It also supports the cellular RF devices like SMARTi-DC, SMARTi-DC+, SMARTi-SD and the Bluemoon Single, Infineon's single chip solution for Bluetooth. If used with S-GOLD2 it provides all power supply functions (except for the RF PA) for a complete advanced GSM Edge smart phone minimizing external device count.

#### Block Description

- Highly efficient step-down converter for main digital baseband supply including Core, DSP and memory interface (External Bus Unit).
- Support of S-GOLD standby power-down concept
- Low-drop-out (LDO) regulators for Flash and mobile RAM memory devices
- Voltage independent switching of two SIM cards
- LDO regulators for baseband I/O supply
- LDO regulator for analog mixed-signal section of S-GOLD
- Low-noise LDO regulators for RF devices
- Supply for Bluemoon Single, Infineon's single chip solution for Bluetooth
- Audio amplifier 8 Ohms for handsfree operation and ringing
- Charge Control for charging Li-Ion/Polymer batteries under software control
- Pre-charge current generator with selectable current level
- RTC regulator with ultra-low quiescent current
- USB interface support for peripheral and mini-host mode
- Backlight LEDs driver with current selection and PWM dimming function
- Two single LED driver outputs for signaling
- Vibrator driver with adjustable voltage
- Fully controllable by software via I2C - Bus
- Temperature and battery voltage sensors
- Interrupt channels for peripherals
- System debug mode
- VQFN 48 package with heat sink and non-protruding leads
- Compatible with the Infineon E-GOLD+ V2 and V3

### 3. TECHNICAL BRIEF



**Figure 4 Top level block diagram of the SM-Power(PMB6812)**

SM-POWER is a further step on the successful E-Power product line with enhanced and optimized functionality. SM-POWER features a baseband supply concept with a DC/DC step-down converter (SDBB) cascaded by two linear regulators (LBB1/2)

- SM-POWER's DC/DC converter makes up to 40 % reduction of battery current for smart phone functions (e.g. organizer functions, games, MP3 decoding) possible.
- SDBB has high efficiency up to 95% and also a power save mode.
- Memory Interface is directly supported by the SDBB
- SDBB can also act as main supply voltage for E-GOLD+ or S-GOLDlite baseband devices.
- For S-GOLD two linear regulators for DSP and Core are cascaded after the SDBB.

SM-POWER supports the standby power-down concept of S-GOLD by temporarily switching off the linear regulator LBB1 for the DSP during mobile standby whenever this subsystem is not used. In this phase the ARM controller and most peripherals including parts of the on-chip SRAM are kept powered-up with power being supplied by the other linear regulator LBB2.

SM-POWER includes a fully differential audio amplifier able to drive loads down to a nominal value of 8 Ohm for usage in hands-free phones and for ringing

- 400 mW maximum output power
- adjustable gain
- mute switch
- click and pop - protection

SM-POWER also integrates a charging function for Li-Ion, Li-Polymer batteries

- Pre-charge current source with two current levels
- Constant current / constant voltage charging with 3 different termination voltages
- Programmable charge current limitation for use with different batteries
- Freely programmable pulse charging to reduce the thermal power dissipation in the constant voltage charging phase
- Top-off charge current sensing

SM-POWER completes the USB interface of S-GOLD

- Regulated voltage for S-GOLD USB interface including reverse current and over-voltage protection
- Switch to supply USB pull-up resistor
- Mini-host pull down resistor functionality
- Charge pump with internal switching capacitor for USB host VBUS supply voltage

SM-POWER fully supports LED and Vibra Motor functionality

- no external components needed
- driver for backlight LEDs adjustable in steps up to 140mA and with soft turn on and off by PWM dimming
- two driver outputs for single LEDs for pre-charge indication and signaling with i.e. change of color
- driver for Vibrator Motor with adjustable voltages, soft startup / shutdown and current limitation

SM-POWER offers several control functions

- Power-on Reset Generator with logic state machine
- I2C bus interface
- I2C bus configurable mode control logic with ON (push-button or RTC), VCXOEN and LRF3EN (wake-up by Bluetooth) inputs
- Programmable interrupt channels to handle peripherals like SIM, MMC and USB
- Monitoring of charging functions
- Under-voltage Shut-Down
- Error flags (volatile or non-volatile) from many power-supply functions and thermal sensor in order to debug system
- Over-temperature Shut-Down
- Over-temperature Warning
- Support of S-GOLD standby power-down concept
- Support of S-GOLD Power-Down Pad Tristate Function

### 3. TECHNICAL BRIEF

Table 6 LDO Output Table of SM-Power

LDO	Net name	Output Voltage	Output Current	Usage
SDBB	1V8_MEM	1.8V	850mA	Memory & for LDO
LRFC	1V5_RF	1.5V	120mA	RF transceiver
LBB1	1V5_DSP	1.5V	170mA	DSP in BBP
LBB2	1V5_CORE	1.5V	300mA	ARM core in BBP
LINT	2V72_IO	2.72V	135mA	Peripherals
LSIM	2V85_SIM	2.85V	22mA	SIM card
LSIM2	2V85_IO2	2.85V	200mA	Peripherals
LMMC	2V85_CARD	2.85V	135mA	SD card
LANA	2V65_ANA	2.65V	220mA	Analog block in BBP
LRTC	2V11_RTC	2.11V	0.3mA	RTC block & Backup battery
LRF1	2V85_RF	2.85V	250mA	RF IC
LRF2	2V7_RF	2.7V	10mA	RF IC
LRF3	2V65_BT	2.65V	150mA	BT IC(Blue moon
LUSB	3V1_USB	3.1V	45mA	USB I/F

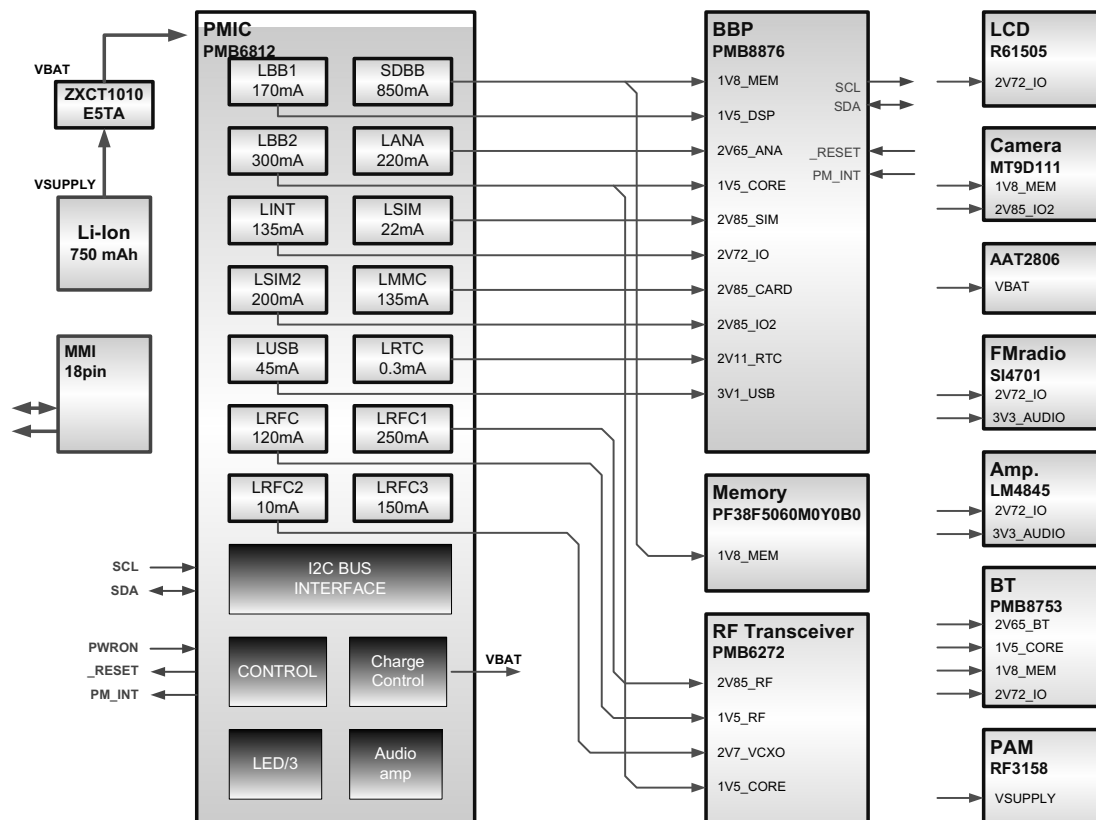


Figure 5 Power domain block diagram of KE820/KG99

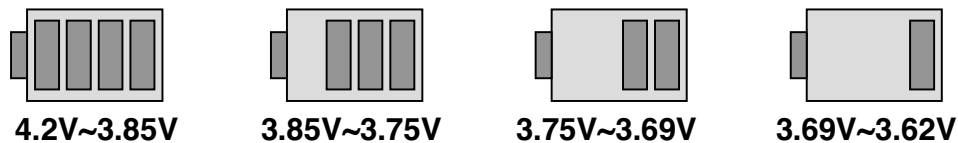


### 3. TECHNICAL BRIEF

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#### 3.3.2. Charging

SM-POWER provides together with an external p-channel FET Siliconix Si3455 an external AC-adapter a complete charge control function for charging of Li-Ion or Li-Ion-Polymer batteries. Either a 1-cell Li-Ion or Li-Ion-Polymer battery with 4.1, 4.2 or 4.4 Volts may be used.



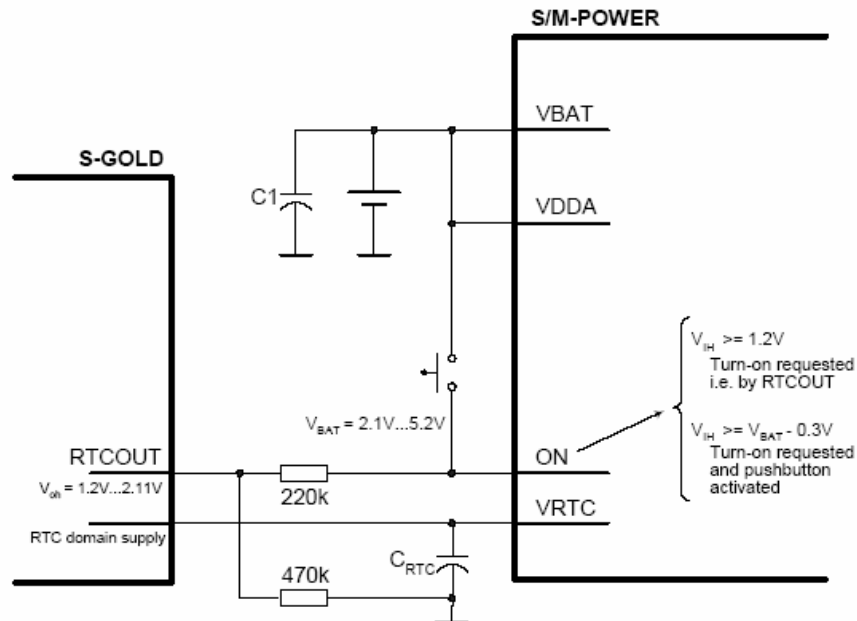
**Figure 7 Battery Block Indication**

1. Charging method : CC-CV
2. Charger detect voltage : 4.0V
3. Charging time : 3h
4. Charging current : 500mA
5. CV voltage : 4.2V
6. Cutoff current : 100mA
7. Full charge indication current (icon stop current) : 100mA
8. Recharge voltage : 4.00V
9. Low battery alarm
  - a. Idle : 3.50V~3.35V
  - b. Dedicated : 3.59V~3.35V
10. Low battery alarm interval
  - a. Idle : 3min
  - b. Dedicated:1min
11. Switch-off voltage : 3.35V
12. Charging temperature adc range
  - a.  $\sim -5^{\circ}\text{C}$  : low charging voltage operation (3.6V ~ 3.9V) .
  - b.  $-5^{\circ}\text{C} \sim 50^{\circ}\text{C}$  : standard charging (up to 4.2 V)
  - c.  $50^{\circ}\text{C} \sim$  : low charging voltage operation (3.6V ~ 3.9V)

#### 3.4. Power ON/OFF

KE820/KG99 Power State : Defined 3cases as follow

- ▶ Power-ON : Power key detect ( SM-Power's ON port)
- ▶ Power-ON-charging : Charger detect.
- ▶ Power-ON-remote : remote power on detect (Factory use only)

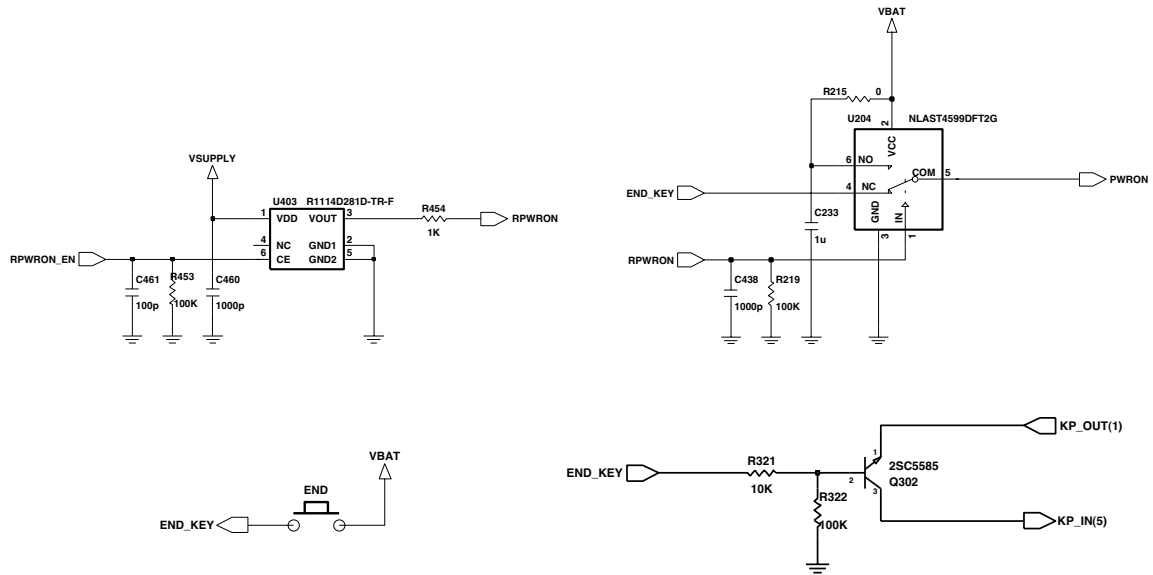


**Figure 8 Power on application.**

Input ON is a power-on input for SM-POWER with 2 active high levels (see Figure 8). It might be triggered by a push button or by the RTCOUT output of the S-GOLD device as well. To detect if the push-button is pressed during system operation the logical level at pin ON or its change (if Bit 1 EION in INTCTRL2 is asserted) is recorded in bit LON of the ISF register. If the high level of voltage at pin ON does not reach VIHdet ( $V_{bat}-0.8 \sim V_{bat}-0.3$ ) the above-mentioned bit won't be set.

To support Remote power on function for factory mass production, applied an analog switch as following figure. As monitoring the RPWRON(GPIO\_110) and Key matrix KP\_OUT(1) & KP\_IN(5), KE820/KG99 system recognize whether remote power on or End-key pushed

### 3. TECHNICAL BRIEF



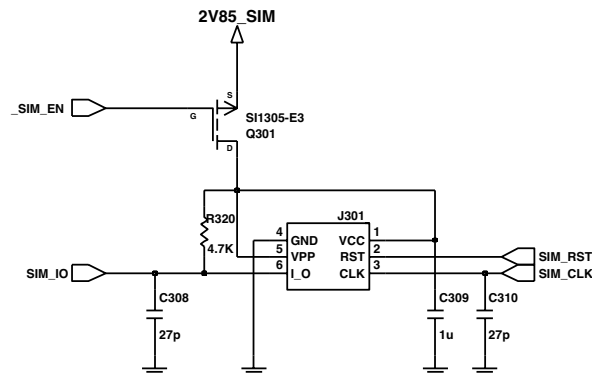
**Figure9 Remote power on and End-key power on circuit**

### 3.5. SIM interface

KE820/KG99 supports 1.8V & 3V plug in SIM, SIM interface scheme is shown in (Figure 10). SIM\_IO, SIM\_CLK, SIM\_RST ports are used to communicate with BBP(S-Gold2) and the SIM power supply enabled by BBP (\_SIM\_EN).

SIM Interface

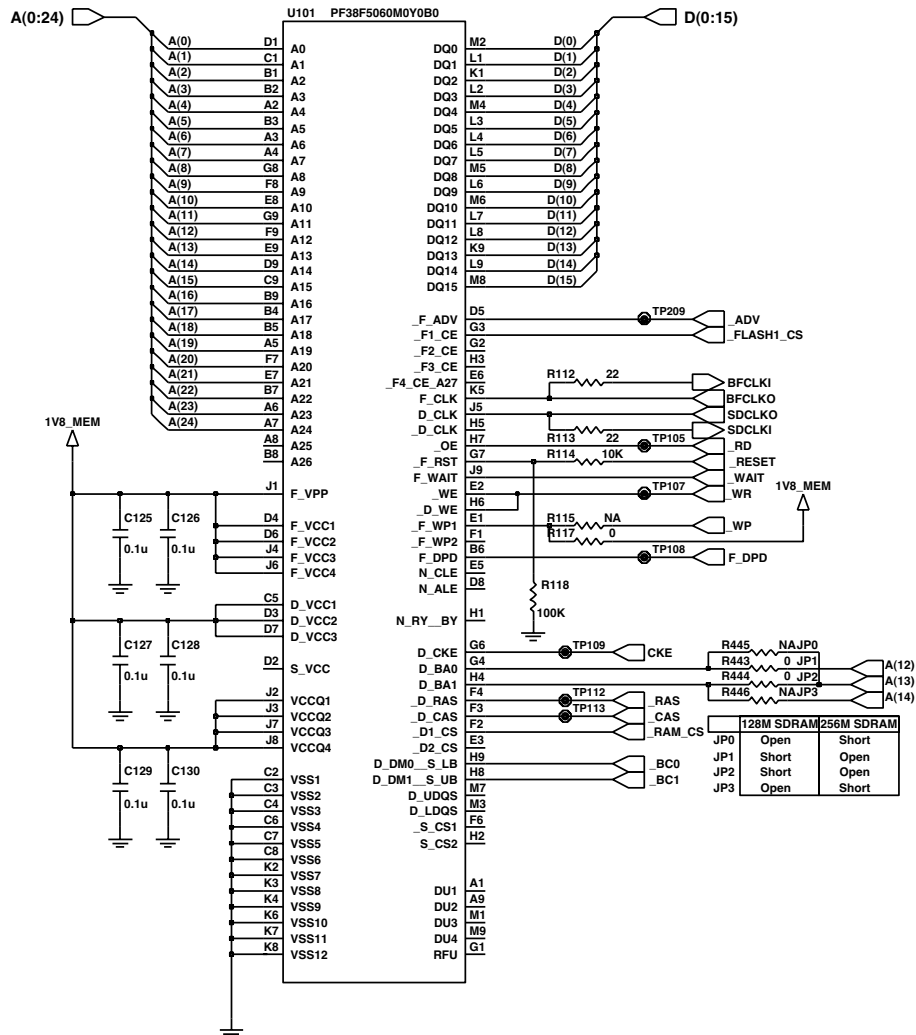
- SIM\_CLK : SIM card reference clock
- SIM\_RST : SIM card Async /sync reset
- SIM\_IO : SIM card bidirectional reset



**Figure 10 SIM CARD Interface**

## 3.6. Memory

256Mbit Flash & 128Mbit SDRAM employed on KE820/KG99 with 16 bit parallel data bus thru ADD(0)~ ADD(24). The 256Mbit Sibley Wireless Flash memory with LPSPDRAM stacked device family offers multiple high-performance solutions. The Sibley flash die is manufactured on 90 nm process technology. It delivers 108 MHz synchronous burst and page-mode read rates with supports multi-partitioning with Read-While-Write (RWW) or Read-While-Erase (RWE) dual operations. The LPSPDRAM is a high-performance volatile memory operating at speeds up to 104 MHz with configurable burst lengths.



**Figure 11 Flash memory & SDRAM MCP circuit diagram**

### 3. TECHNICAL BRIEF

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#### 3.7. LCD Display

LCD module include:

- LCD : 220 x 176 265K Colors TFT LCD
- Backlight : 4 piece of white LED illumination

LCD module is connected to main board thru 30 pins connector.

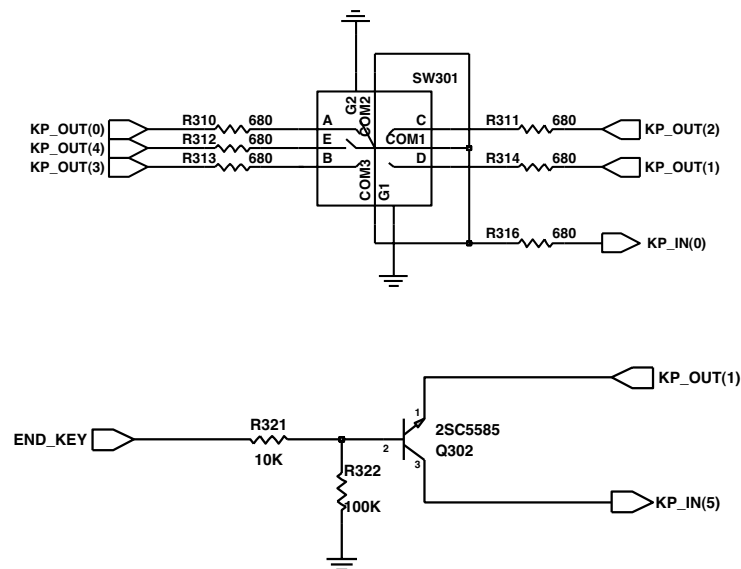
LCD FPC Interface Spec:

Table 7 LCD FPC Interface Spec.

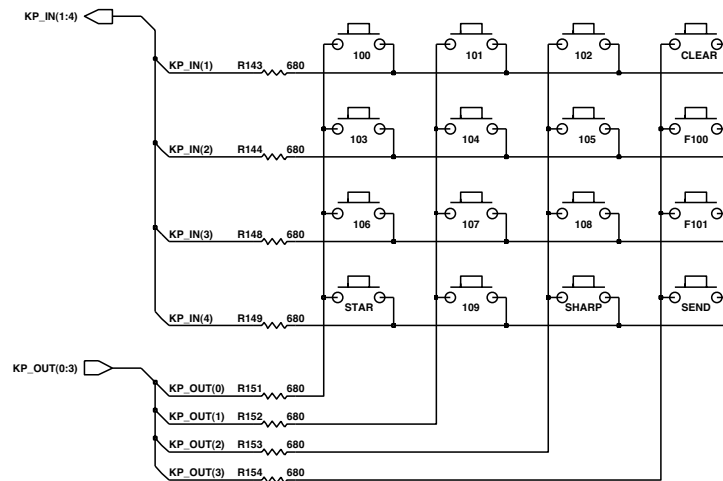
Pin No.	Pin Name	I/O	Description
1	GND	-	Ground
2	2V8_VDD	Power	LCD power supply
3	2V8_Vci	Power	LCD power supply
4	LCD_RESET	I	LCD reset
5	GND	I/O	Ground
6	L_D(0)	I/O	Data[0] for LCD
7	L_D(1)	I/O	Data[1] for LCD
8	L_D(2)	I/O	Data[2] for LCD
9	L_D(3)	I/O	Data[3] for LCD
10	L_D(4)	I/O	Data[4] for LCD
11	L_D(5)	I/O	Data[5] for LCD
12	L_D(6)	I/O	Data[6] for LCD
13	L_D(7)	I/O	Data[7] for LCD
14	GND	-	Ground
15	GND	-	Ground
16	GND	-	Ground
17	MLED_A	I	BLU LED common Anode
18	MLED_C1	O	BLU LED1 Cathode
19	MLED_C2	O	BLU LED2 Cathode
20	MLED_C3	O	BLU LED3 Cathode
21	MLED_C4	O	BLU LED4 Cathode
22	GND	-	Ground
23	L_CS	I	LCD chip select
24	L_RD(N.C.)	I	Read strobe
25	L_ADS	I	Address data switch
26	L_WR	I	Write strobe
27	GND	-	Ground
28	Vsync(N.C.)	O	Vertical sync
29	LCD_ID	O	LCD maker Identification
30	GND	-	Ground

### 3.8. Keypad Switching & Scanning

The keypad interface is a peripheral which can be used for scanning keypads up to 8 rows (outputs from Port Control Logic) and 8 columns (inputs to PCL). The number of rows and columns depend on settings of the PCL.



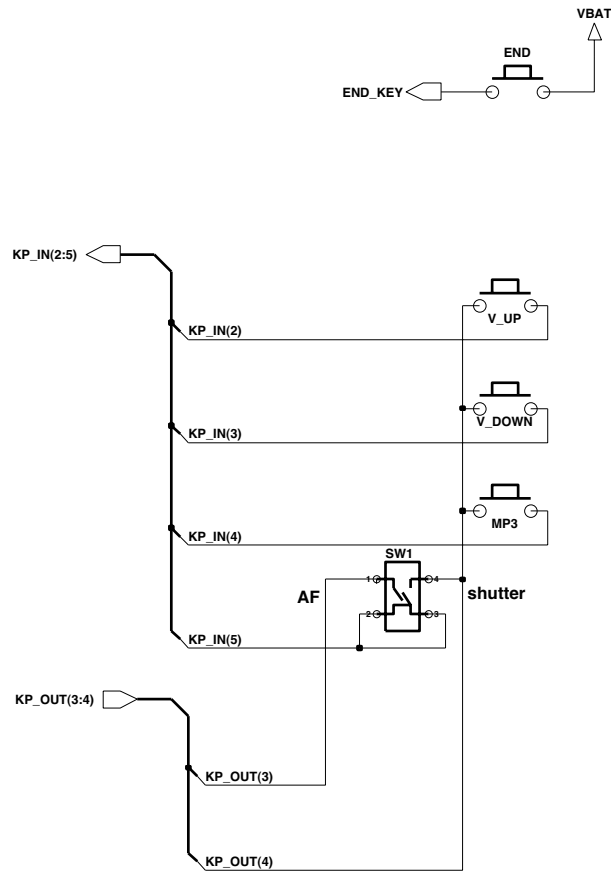
**Figure 12 Main PCB part Jog-key matrix**



**Figure 13 Sub PCB part numeric key matrix**

### 3. TECHNICAL BRIEF

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**Figure 14 FPCB part key matrix**

Most of numeric keys are located on the sub PCB, Jog key for menu navigation is on the main PCB, and Power on (End key), MP3 hot key, Camera AF trigger, shutter and volume up & down keys are connected via 50pin board to board connector between main PCB and FPCB.

#### 3.9. Keypad back-light illumination

There are 7 snow white color LEDs on the sub PCB for keypad illumination. Keypad Back-light is controlled by SM-Power LED port which has constant current control function.

The whole configuration of the SM-POWER LED drivers is shown in below Figure16. ( SLED1, SLED2 port are not used in the KE820.KG99)

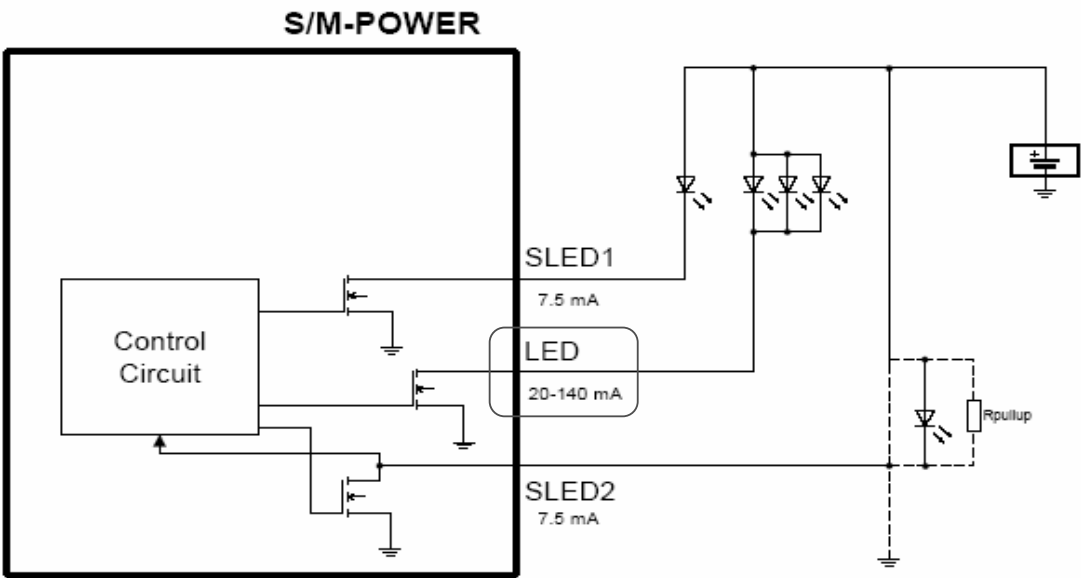


Figure 15 Keypad Back-light LEDs

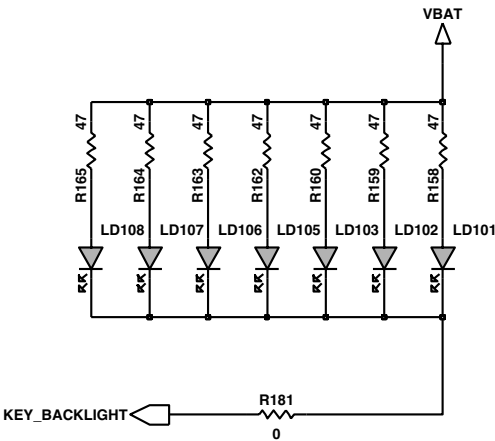
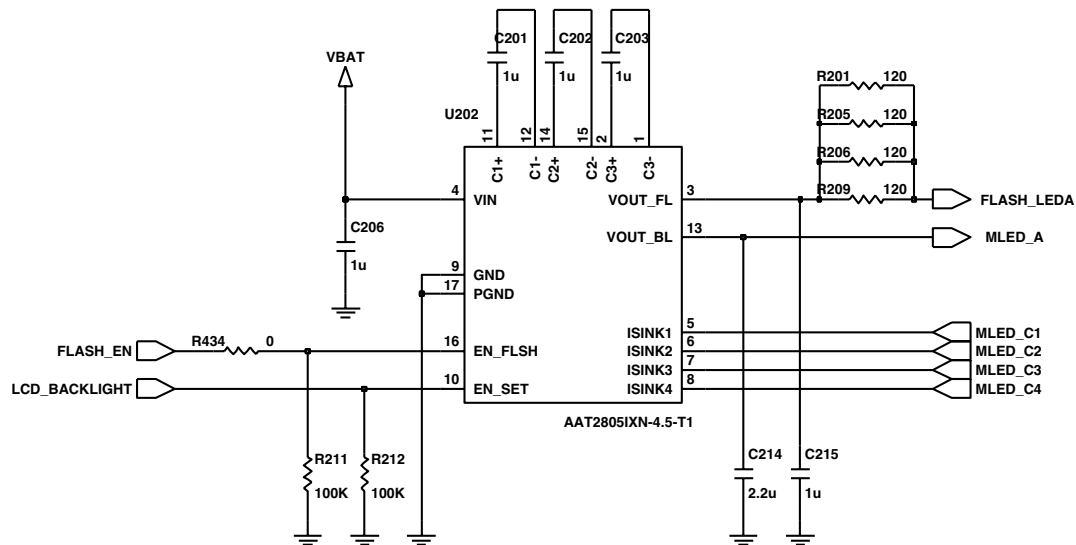


Figure 16 Keypad Back-light LEDs

### 3. TECHNICAL BRIEF

#### 3.10. LCD back light illumination

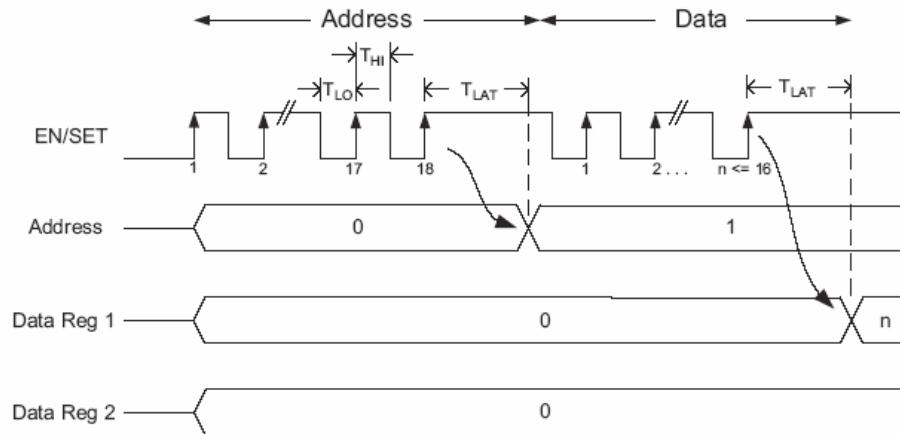
Employed the AAT2805 is a dual charge pump designed to support both the white LED backlight and flash applications for systems operating with lithium-ion/polymer batteries. The backlight charge pump is capable of driving up to four LEDs at a total of 80mA. The current sinks may be operated individually or in parallel for driving higher current LEDs. To maximize power efficiency, the charge pump operates in 1X, 1.5X, or 2X mode, where the mode of operation is automatically selected by comparing the forward voltage of each LED with the input voltage.



**Figure 17 LCD Back light unit and Flash LED charge pump IC**

The interface relies on the number of rising edges of the EN/SET pin to address and load the registers. S2Cwire latches data or address after the EN/SET pin has been held high for time TLAT. The interface records rising edges of the EN/SET pin and decodes them into 16 different states, as indicated in table

### 3. TECHNICAL BRIEF



**Figure 18 EN/SET port control method**

Data	Max I <sub>OUT</sub> (mA)		
	20mA	30mA	15mA
1	20.0	30.0	15.0
2	17.8	26.7	13.3
3	15.9	23.8	11.9
4	14.3	21.4	10.7
5	12.7	19.0	9.5
6	11.1	16.7	8.3
7	10.2	15.2	7.6
8	8.9	13.3	6.7
9	7.9	11.9	6.0
10	7.0	10.5	5.2
11	6.3	9.5	4.8
12	5.7	8.6	4.3
13	5.1	7.6	3.8
14	4.4	6.7	3.3
15	4.1	6.2	3.1
16	0.0	0.0	0.0

Data	D1-D3 (mA)	D4 (mA)
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0.05
6	0	0.5
7	0	1
8	0	2
9	0.05	0
10	0.5	0
11	1	0
12	2	0
13	0.05	0.05
14	0.5	0.5
15	1	1
16	2	2

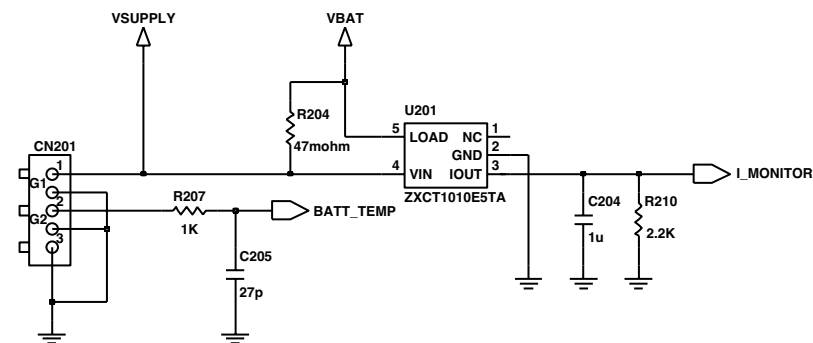
Address	EN/SET Edges	Addressed Register
1	17	1&2: D1-D4 Current
2	18	1: D1-D3 Current
3	19	2: D4 Current
4	20	3: Max Current
5	21	4: Low Current

Data	Max Current
1	20mA Max Scale
2	30mA Max Scale
3	15mA Max Scale
4	Low Current Mode

### 3. TECHNICAL BRIEF

#### 3.11 Battery current consumption monitor

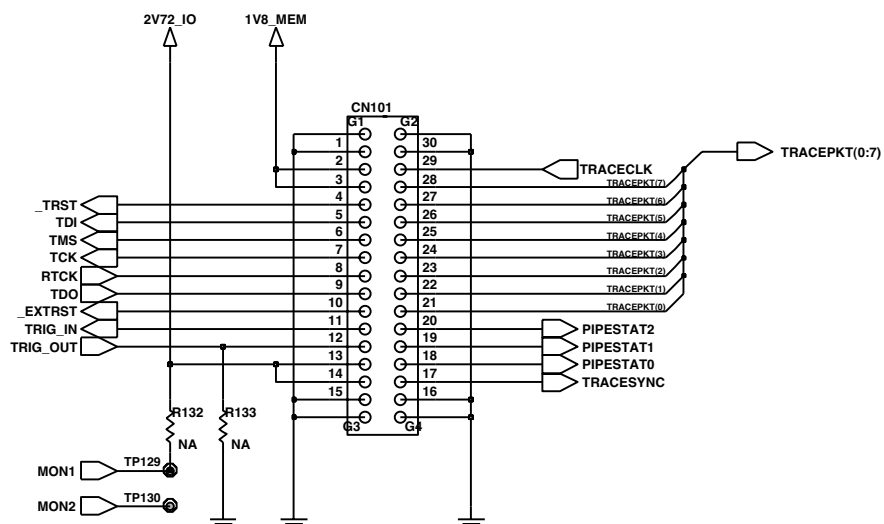
KE820/KG99 use a current monitoring function to calculate the battery capacity and the remaining time, as monitoring current flow from the battery thru 47mohm resistor.



**Figure 19 Current monitor circuit**

#### 3.12 JTAG & ETM interface connector

In key back-light illumination, there are 14 Blue LEDs in Main Board, which are driven by KEY\_BACKLIGHT signal from AD6720.

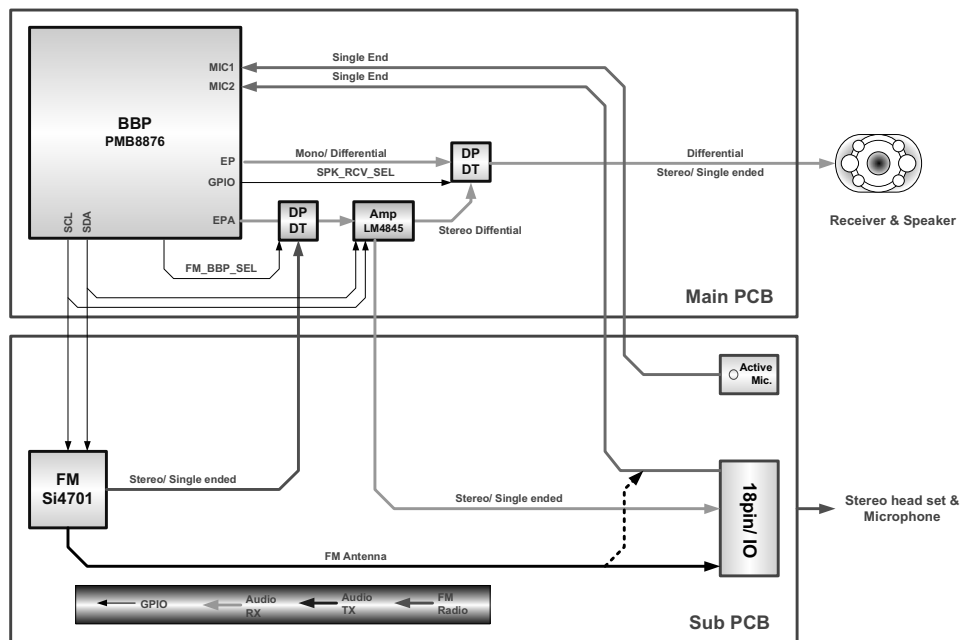


**Figure 20 JTAG & ETM(Embedded Trace Module) interface connector**

In case of KE820/KG99 mass production, the JTAG & ETM interface connector will not be mount on board. That is only for developing and software debugging purpose.( It will not be mounted on mass production PCB)

### 3.13. Audio

KE820/KG99 Audio signal flow diagram as following diagram.



**Figure 21 Audio signal flow diagram**

### 3. TECHNICAL BRIEF

#### 3.13.1. Audio amplifier sub system IC with 3D effect

Audio amplifier sub system IC is an audio power amplifier capable of delivering 500mW of continuous average power into a mono 8Ω load, 25mW per channel of continuous average power into stereo 32Ω single-ended (SE) loads. The LM4845 features a 32-step digital volume control and eight distinct output modes. The digital volume control, 3D enhancement, and output modes (mono/SE/OCL) are programmed through a two-wire I2C interface that allows flexibility in routing and mixing audio channels.

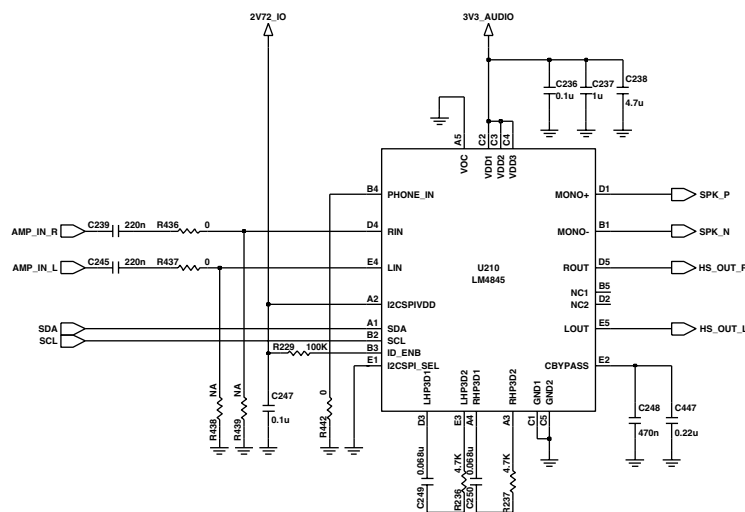


Figure 22 Audio amplifier Sub-system IC

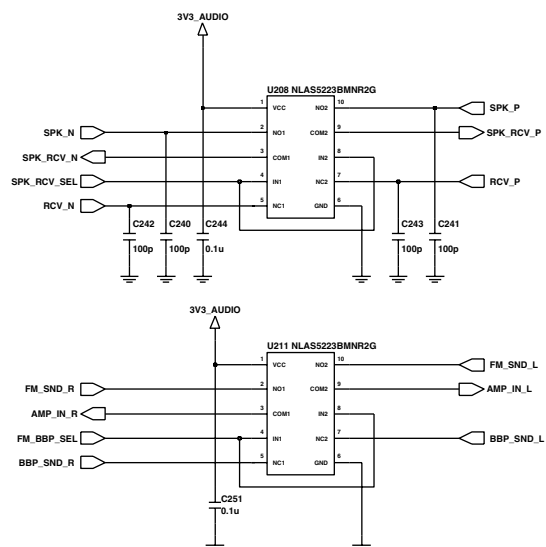
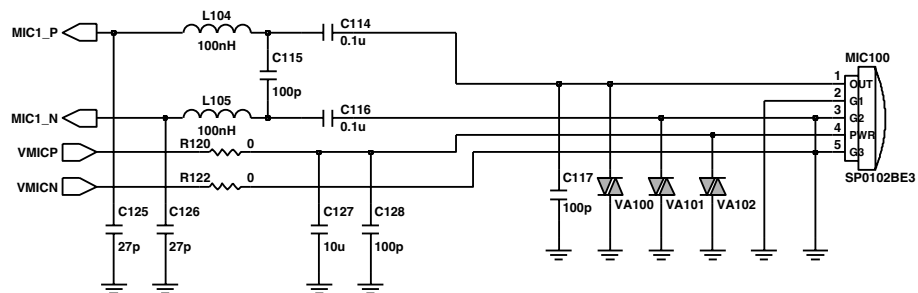


Figure 23 Audio signal distribute analog switch

### 3.13.2. Microphone with gain switching circuit

As controlling the MIC\_GAIN\_SEL, Microphone sensitivity can be selected both -42dB (MIC\_GAIN\_SEL set low) and -30dB (MIC\_GAIN\_SEL set high)



**Figure 24 Microphone with Gain switching circuit**

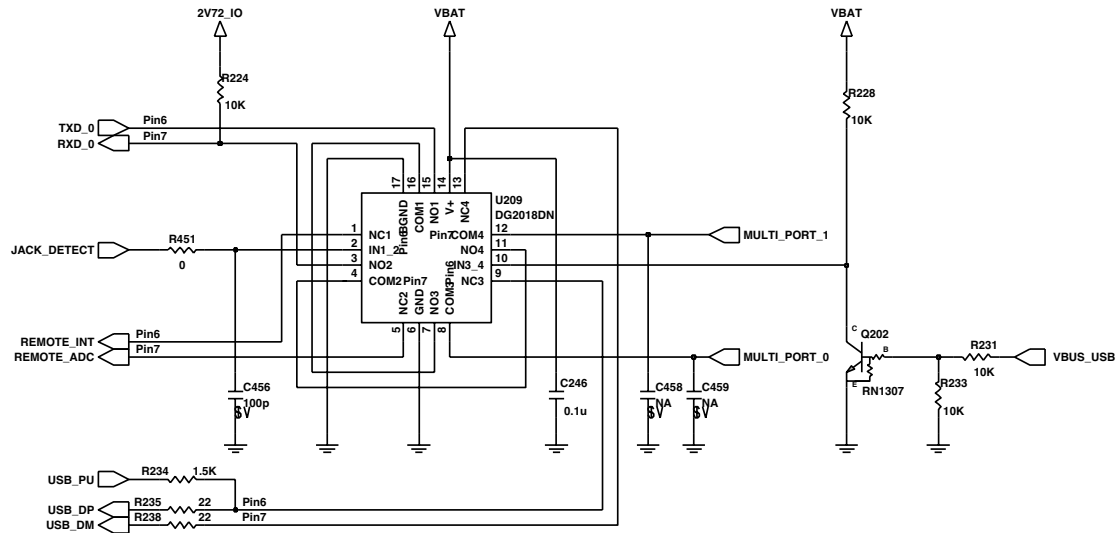
### 3.14. Multi port switch

Multi port switch has employed to decrease MMI(Multi Media Interface) connector's pin number. USB, USART, Remote controlled Headset is connected via this multi port switch. When USB VBUS voltage is detected Multi port 0 and 1 is connected to USB\_DP and USB\_DM each. If the remote controlled headset is plugged into MMI connector, then multi port 0 and 1 in go through REMOTE\_INT and REMOTE\_ADC.

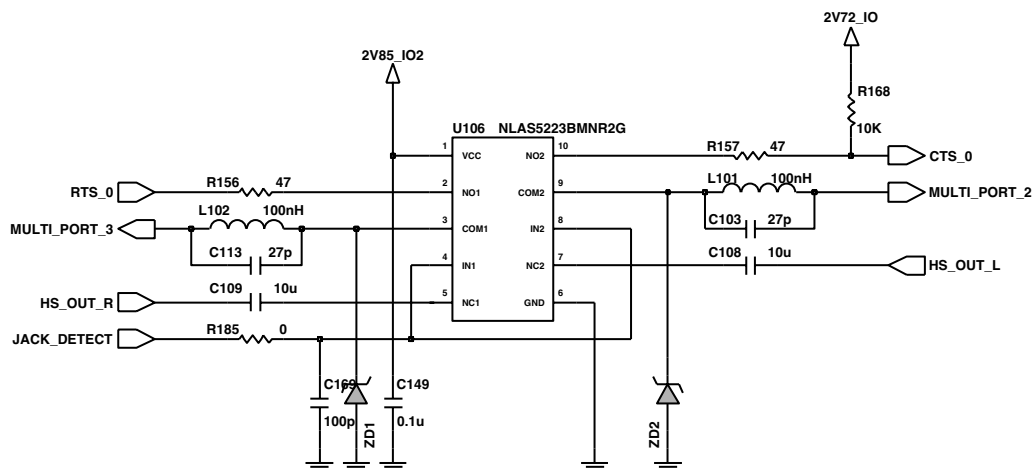
Table 8 Multi port switch truth table

	VBUS_USB='L'	VBUS_USB='L'	VBUS_USB='H'
	JACK_DETECT='L'	JACK_DETECT='H'	
Pin6	REMOTE_INT	TXD	USB_DP
Pin7	REMOTE_ADC	RXD	USB_DM

### 3. TECHNICAL BRIEF



**Figure 25 Multi port switch1- USART/ REMOTE KEY/ USB**



**Figure 26 Multi port switch2- USART/ Headset stereo**

The USB charging circuit is a fully integrated USB VBUS voltage single-cell Li-ion battery charger circuit.

$I_{REF}$  resistor between this pin and the GND pin to set the charge current limit determined by the following equation:

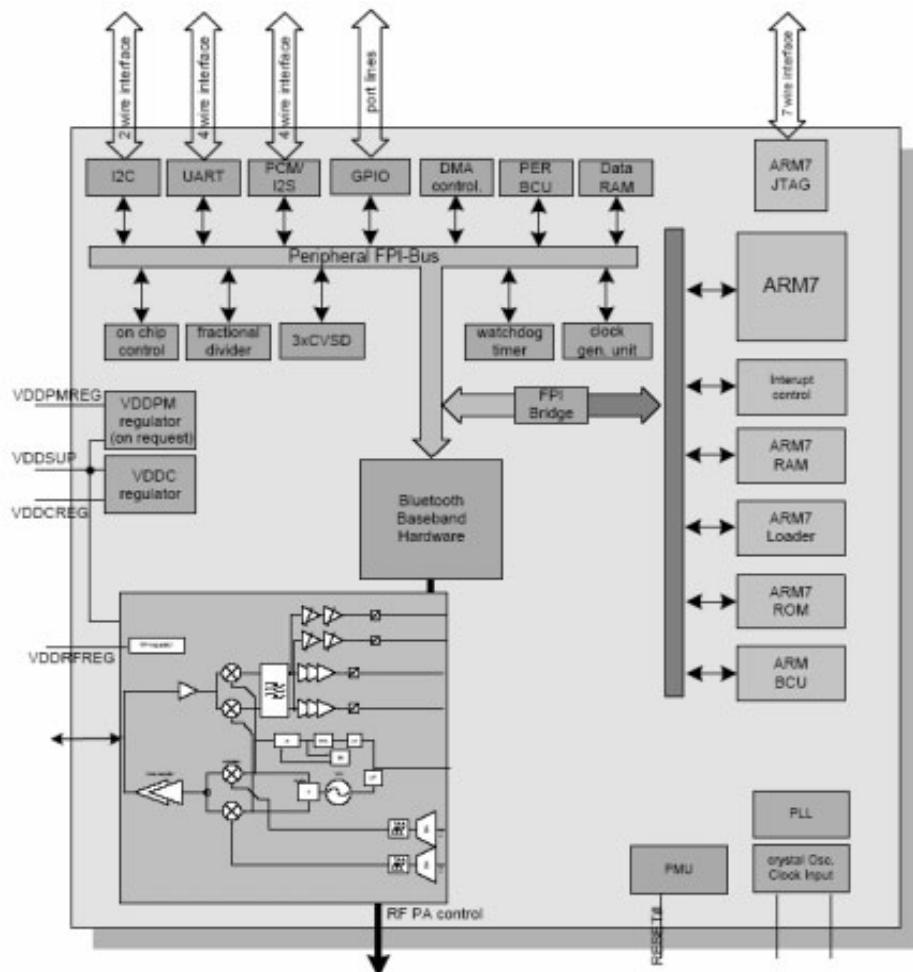
The End Of Charging current is set by IMIN That can be programmed by the as following equation:

Charging indicator LED LD100 controlled by S-GOLD2's GPIO that is CHG\_LED\_CTRL. When TA(Travel Adaptor) is plugged in to 18pin MMI connector, SM-POWER detect charger voltage then inform charger detecting to S-GOLD2. S-GOLD2 maintain low level of CHG\_LED\_CTRL until get EOC(End Of Charging) message from SM-POWER. The LD100 controlled by S-GOLD2 both power off and power on case. When USB cable is connected via MMI connector, indicator LED is controlled same mechanism with TA inserted case. USB charging EOC is not indicated when the terminal is in off status. LED just indicates charging status even though USB charging process reached EOC because S GOLD2 is in off status.

The FM receiver uses a digital low-IF architecture which allows for the elimination of external components and factory adjustments. The receive (RX) section integrates a low noise amplifier (LNA) supporting the worldwide FM broadcast band (87.5 to 108 MHz). An automatic gain control (AGC) circuit controls the gain of the LNA to optimize sensitivity and rejection of strong interferers.



### 3.17. BLUETOOTH



**Figure 29 BLUETOOTH Functional block diagram.**

#### 3.17.1. General Features

- Single Chip Bluetooth device for cellular applications integrating radio, baseband and memory
- Fabricated in advanced low power 0.13 $\mu$ m CMOS technology
- Very low component count (6 external components)
- Ultra low power design
  - Peak current 40mA for basic data rate
  - Peak current 45mA for enhanced data rate
  - Bluetooth low power mode typ. 25 $\mu$ A
- Multiple input clock signals supported (10-40MHz)
- Supply from external voltage regulator 1.8V..3.6V 1)

### 3. TECHNICAL BRIEF

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- Autonomous power down scenarios of Bluetooth and cellular system supported
- Packages:
  - P-VQFN-48 package
  - P-WFLGA-56 package
- Temperature range from -40°C up to 85°C
- Boundary scan for interface lines via JTAG

#### 3.17.2 Micro-Controller-Section

- ARM7TDMI-STM ARM® Processor for protocol and application software
- Timers + Watchdog + Interrupt Module

#### 3.17.3 Micro-Controller Memory

- 32 KByte RAM
- 256 KByte read only Program Memory
- 8 KByte Patch RAM

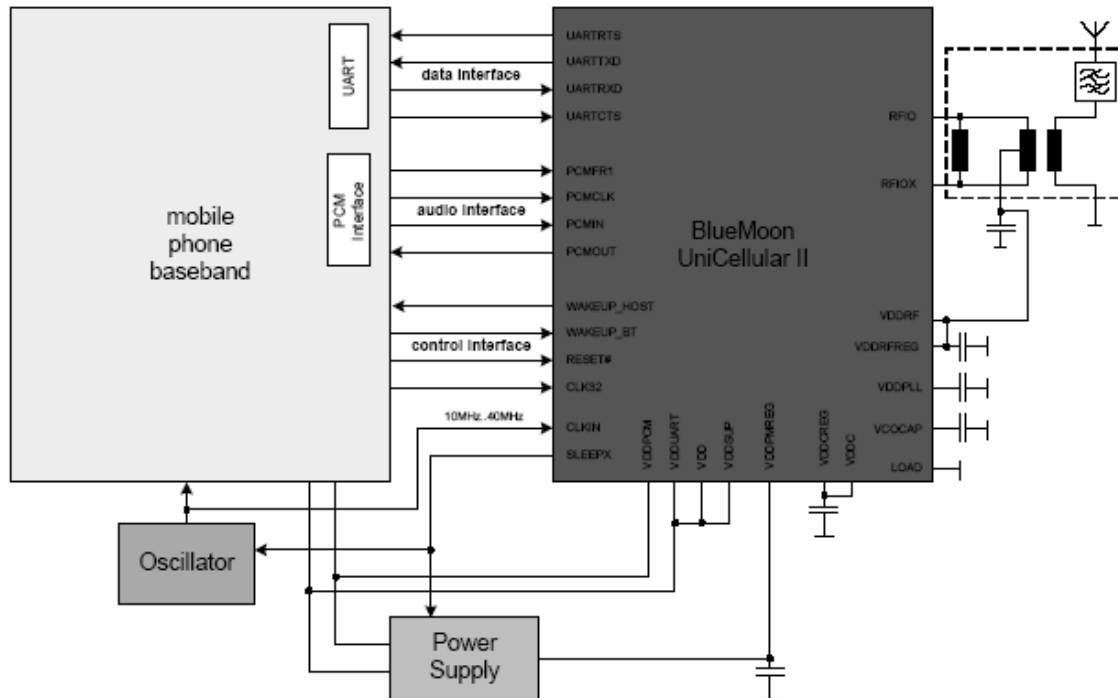
#### 3.17.4 Interfaces

- UART (Bluetooth - Interface, support for HCI UART and Three-Wire UART transport layers with/without hardware handshaking) up to 3.25MBaud
- Two channel PCM Audio interface with I2S mode
- I2C Interface
- Three channel full duplex CVSD trans coder
- General Purpose I/Os
  - External interrupt
  - Port output levels available during low-power mode (VDD supplied)
- Separate voltage domains for GPIO, UART and PCM interfaces
- Control signal for requesting external (cellular) system clock
- Multi frequency (e.g. 32.768 kHz) low power clock input

#### 3.17.5. RF-Section

- Integrated antenna switch to minimize external components count
- Programmable RF transmit power between -55dBm...+6dBm
  - Fine tuning in 2dB programmable steps also supported
- 20dBm power class 1 supported with external power amplifier
  - Separate TX output interface to PA (bypass of internal T/R switch)
  - Digital power step control
- Receiver sensitivity typ. -90dBm
- High performance integrated LNA with excellent blocking and inter modulation performance
- Low-IF receiver topology eliminates external IF filters
- Digital demodulation for optimum sensitivity and co- / adjacent channel performance
  - Digital offset compensation, symbol and frame synchronization
- RSSI information for power control

### 3.17.6 System Integration



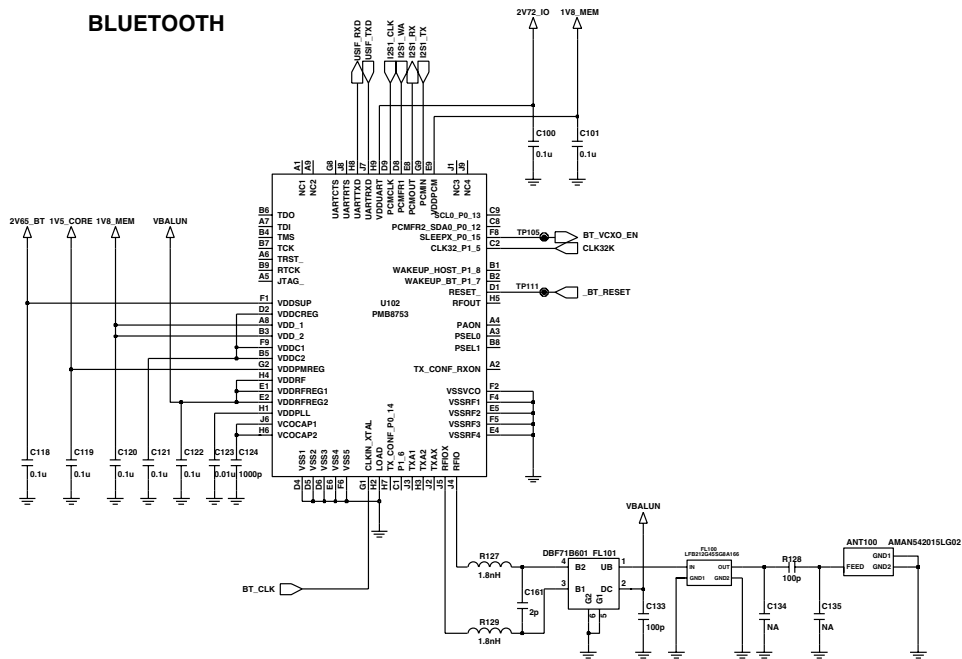
**Figure 30 Mobile system integration**

The UART (serial interface) is used for the software interface between S-Gold2 baseband and the Bluetooth chip. For the HCI UART transport layer four interface lines are needed, two for data (UARTRXD and UARTRXD) and two for hardware flow control (UARTRTS and UARTCTS). For the HCI Three-Wire UART transport layer two interface lines (UARTRXD and UARTRXD) are needed. The hardware flow control lines (UARTRTS and UARTCTS) are supported but the use is optional. In KE820/KG99 used three-wire UART communication.

The UART interface has its own supply voltage (VDDUART) to ensure compatibility with the I/O voltages used by the S-Gold2.

The PCM/I2S interface is used as audio interface and can handle up to two voice channels. The PCM interface also has its own supply voltage (VDDPCM) to ensure compatibility with the I/O voltages used by the S-Gold2 baseband processor.

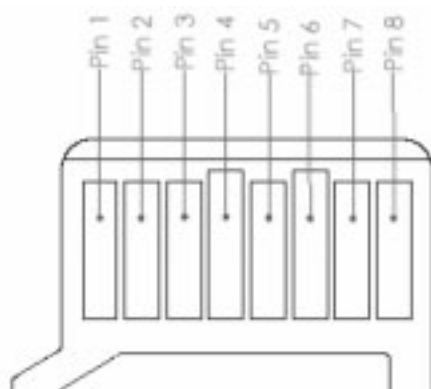
### 3. TECHNICAL BRIEF



**Figure 31 Bluetooth circuit**

### 3.18. Micro SD external memory card slot

The MicroSD Memory Module has eight exposed contacts on one side. The S-Gold2 is connected to the module using a dedicated eight-pin connector

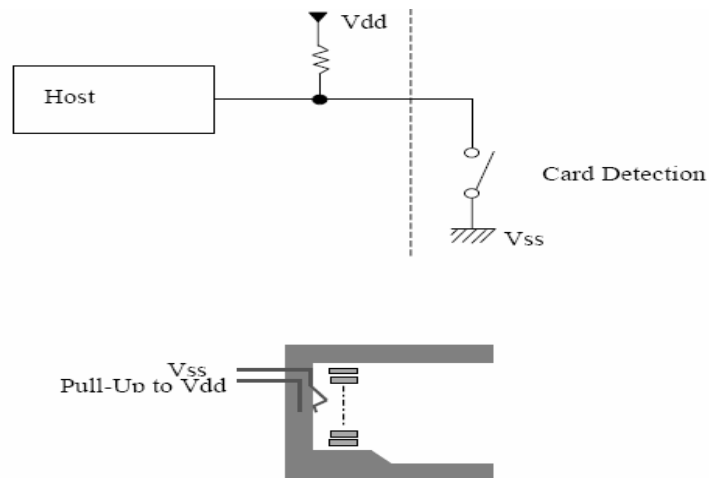


**Figure 32 Micro SD pin assignment**

### 3. TECHNICAL BRIEF

Table 9 Micro SD memory pad assign.

SD mode			
Pin No.	Name	Type	Description
1	DAT2	I/O	Data bit [2]
2	CD/DAT3	I/O	Data bit [3]
3	CMD	I/O	Command response
4	VDD	Power	Power supply
5	CLK	I	Clock
6	VSS	Ground	Power ground
7	DAT0	I/O	Data bit [0]
8	DAT1	I/O	Data bit [1]

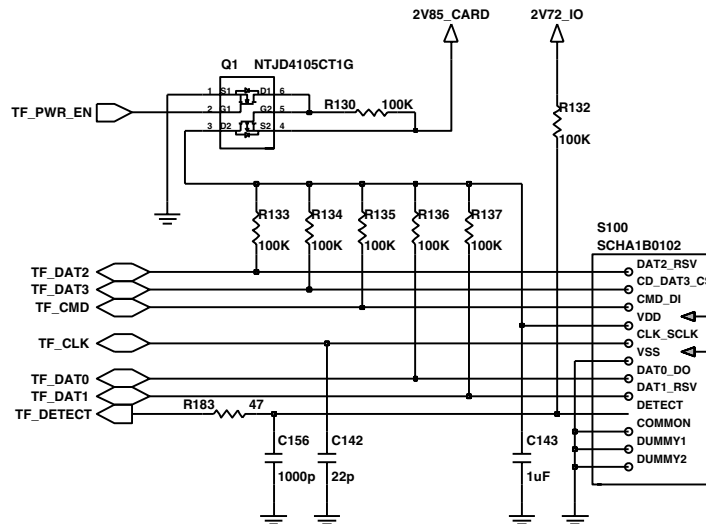


**Figure 33 Micro SD memory card detection scheme**

Table 10 Micro SD memory card detect truth table.

	Micro SD card status	
	it is removed	it is inserted
TF_DETECT	High	Low

### 3. TECHNICAL BRIEF



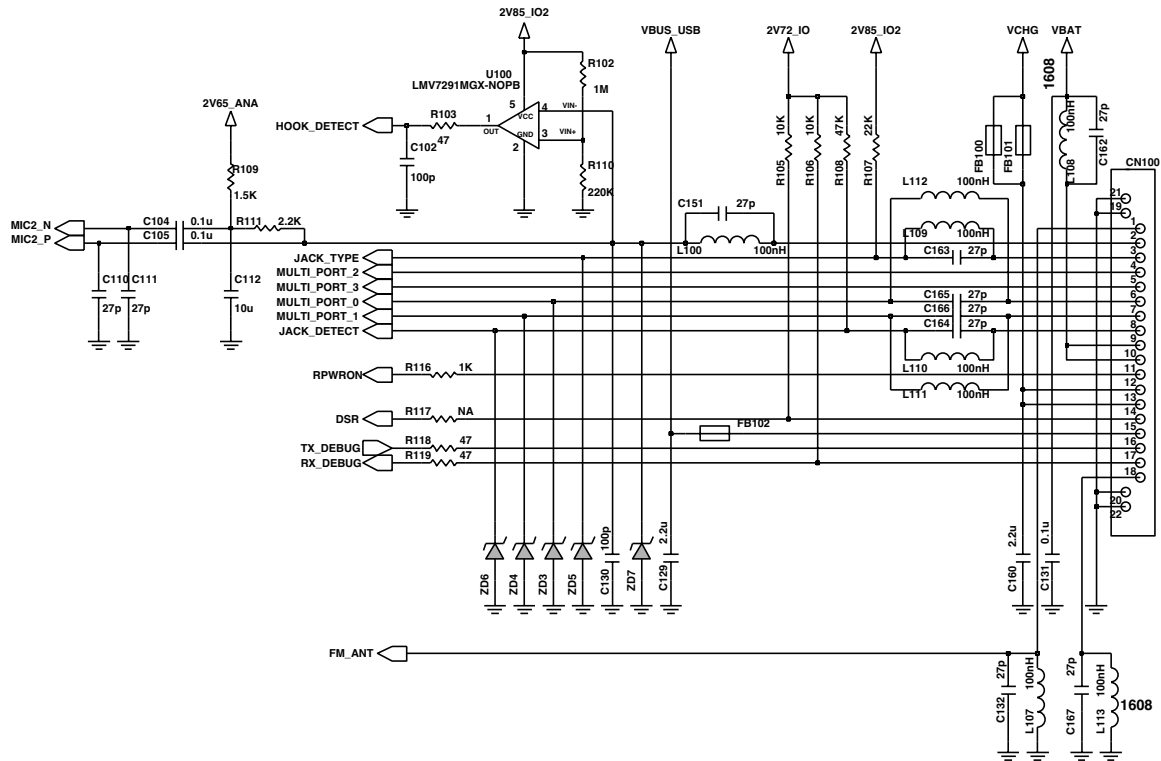
**Figure 34 Micro SD socket circuit with power control**

### 3.19. 18pin Multi Media Interface connector

Table 11 Multi media interface pin assign

KE820/KG99 MMI		
	Pin Function	Description
1	FM_ANT	FM radio antenna / Audio ground
2	HS_MIC	Headset microphone signal
3	JACK_TYPE	Accessory type detect
4	HS_OUT_L / CTS	Headset left sound / CTS
5	HS_OUT_R / RTS	Headset Right sound / RTS
6	TXD / USB_DP / REMOTE_INT	USART / USB/ Remote control interrupt
7	RXD / USB_DM / REMOTE_ADC	USART / USB/ Remote control Key ADC
8	JACK_DETECT	Headset detect (active low)
9	VBAT	Battery voltage
10	VBAT	Battery voltage
11	RPWRON	Remote power on (active high. 2.8V)
12	VCHG	Charger voltage
13	VCHG	Charger voltage
14	DSR	N.C.
15	VBUS_USB	USB VBUS
16	TX_DEBUG	Trace TX data(Debug)
17	RX_DEBUG	Trace RX data(Debug)
18	GND	Power GND

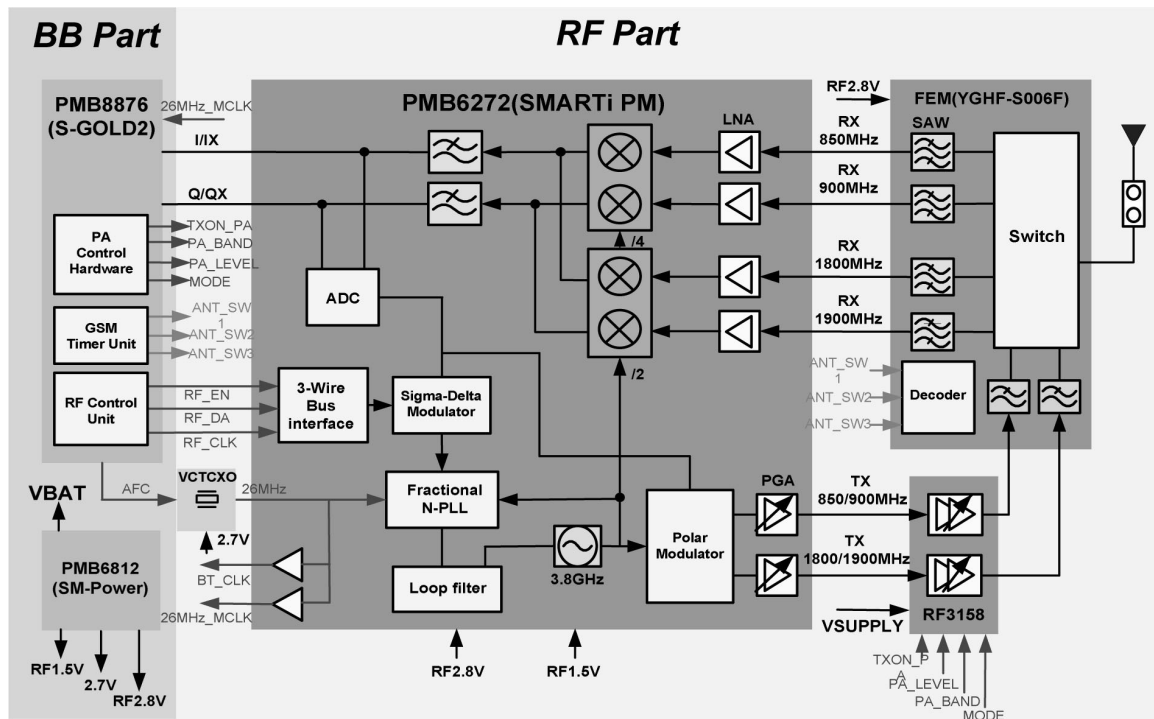
### 3. TECHNICAL BRIEF



**Figure 35 MMI 18pin connector circuit**

### 3. TECHNICAL BRIEF

#### RF circuit



**Figure 36 RF Block Diagram**

#### 3.20. General Description

The RF transceiver (PMB 6272 SMARTi-PM) is an integrated single chip, quad-band transceiver for GSM850/GSM900/GSM1800/GSM1900 designed for voice and data transfer applications. The transceiver provides an analog I/Q baseband interface and consists of a direct conversion receiver and a quad-band polar transmitter for GSM and EDGE with integrated PGA functionality. Further on a completely integrated SD-synthesizer with HSCSD and GPRS/EDGE capability, a digitally controlled reference oscillator with three outputs, a fully integrated quad-band RF oscillator and a three wire bus interface with all necessary control circuits complete the transceiver.



### 3.21. Receiver part



### 3. TECHNICAL BRIEF

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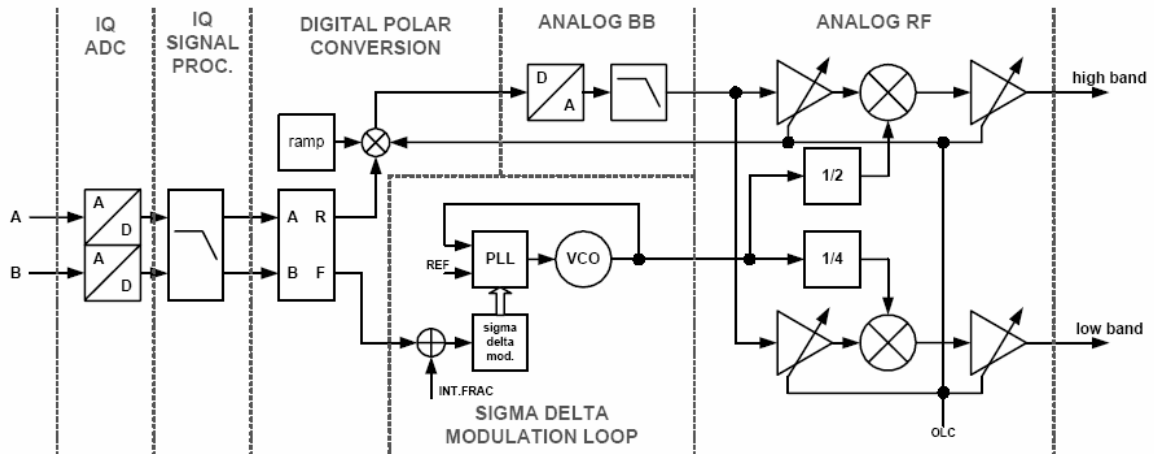
The constant gain direct conversion receiver contains all active circuits for a complete receiver chain for GSM/GPRS/EDGE (see Figure 39). The GSM850/900/DCS1800/ PCS1900 LNAs with balanced inputs are fully integrated. No inter-stage filtering is needed. The orthogonal LO signals are generated by a divider-by-four for GSM850/900 band and a divider-by-two for the DCS1800/PCS1900 band. Down conversion to baseband domain is performed by low/high band quadrature direct down conversion mixers.

The baseband chain contains a LNB (low noise buffer), channel filter, output buffer and DC-offset compensation. The 3rd order low pass filter is fully integrated and provides sufficient suppression of blocking signals as well as adjacent channel interferers and avoids anti-aliasing through the baseband ADC. The receive path is fully differential to suppress on-chip interferences. Several gain steps are implemented to cope with the dynamic range of the input signals. Depending on the baseband ADC dynamic range, single- or multiple gain step switching schemes are applicable. Furthermore an automatic DC-offset compensation can be used (depending on the gain setting) to reduce the DC-offset at baseband-output. A programmable gain correction can be applied to correct for front end- and receiver gain tolerances.

#### 3.22. Transmitter part

The GMSK transmitter supports power class 4 for GSM850 and GSM900 as well as power class 1 for DCS1800 and PCS1900. The digital transmitter architecture is based on a very low power fractional-N Sigma-Delta synthesizer without any external components (see Figure39). The analog I/Q modulation data from the baseband is converted to digital, filtered and transformed to polar coordinates. The phase/frequency signal is further on processed by the Sigma-Delta modulation loop. The output of its associated VCO is divided by four or two, respectively, and connected via an output buffer to the appropriate single ended output pin. This configuration ensures minimum noise level. The 8PSK transmitter supports power class E2 for GSM850 and GSM900 as well as for DCS1800 and PCS1900. The digital transmitter architecture is based on a polar modulation architecture, where the analog modulation data (rectangular I/Q coordinates) is converted to digital data stream and is subsequently transformed to polar coordinates by means of a CORDIC algorithm. The resulting amplitude information is fed into a digital multiplier for power ramping and level control. The ready processed amplitude signal is applied to a DAC followed by a low pass filter which reconstructs the analog amplitude information. The phase signal from the CORDIC is applied to the Sigma-Delta fractional-N modulation loop. The divided output of its associated VCO is fed to a highly linear amplitude modulator, recombining amplitude and phase information. The output of the amplitude modulator is connected to a single ended output RF PGA for digitally setting the wanted transmit power. The PA interface of SMARTi-PM supports direct control of standard dual mode power amplifiers (PA's) which usually have a power control input VAPC and an optional bias

### 3. TECHNICAL BRIEF



**Figure 39 Transmitter part block diagram**

control pin VBIAS for efficiency enhancement. In GMSK mode, the PA is in saturated high efficiency mode and is controlled via its VAPC pin directly by the baseband ramping DAC. In this way both up- / down-ramping and output power level are set. In 8PSK mode, the ramping functionality is assured by an on-chip ramping generator, whereas output power is controlled by the PGA's as described above.

The transceiver contains a fractional-N sigma-delta synthesizer for the frequency synthesis in the RX operation mode. For TX operation mode the fractional-N sigma-delta synthesizer is used as Sigma-Delta modulation loop to process the phase/frequency signal. The 26MHz reference signal is provided by the internal crystal oscillator. This frequency serves as comparison frequency of the phase detector and as clock frequency for all digital circuitry. The divider in the feedback path of the synthesizer is carried out as a multi-modulus divider (MMD). The loop filter is fully integrated and the loop bandwidth is about 100 kHz to allow the transfer of the phase modulation. The loop bandwidth is automatically adjusted prior to each slot (OLGA<sup>®</sup>). To overcome the statistical spread of the loop filter element values an automatic loop filter adjustment (ALFA) is performed before each synthesizer startup. The fully integrated quad-band VCO is designed for the four GSM bands (850, 900, 1800, 1900 MHz) and operates at double or four times transmit or receive frequency. To cover the wide frequency range the VCO is automatically aligned by a binary automatic band selection (BABS) before each synthesizer startup.

The VCTCXO (X401) supply 26MHz reference clock and controlled by AFC input to generate a strict system clock. The 26MHz clock is used to Transceiver(U402), Bluetooth chip(U102) and S-Gold2 (U102).



### 3.25. Front End Module control

Implemented in the S-Gold2 (U102) are three outputs which are ANT\_SW1, ANT\_SW2 and ANT\_SW3 for direct control of front end modules with three logic input pins to select RX and TX mode as well as low and high band operation.

MODE	Tx 1GHz	Tx 2GHz	Rx GSM	Rx EGSM	Rx DCS	TX PCS
VDD	ON	ON	ON	ON	ON	ON
VCTRL1	ON	ON	OFF	OFF	OFF	OFF
VCTRL2	OFF	ON	ON	ON	OFF	OFF
VCTRL3	OFF	OFF	ON	OFF	ON	OFF

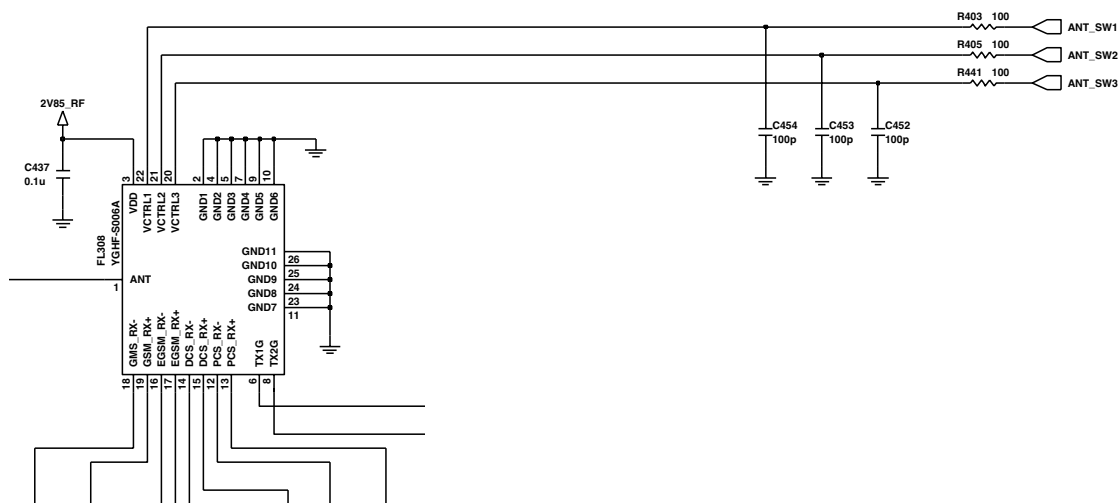


Figure 41 FEM schematic

### 3.26. Power Amplifier Module

The RF3158 (U401) is a high-power, dual-mode amplifier (PA) with integrated power control. This PA is designed to operate both in a saturated mode for GMSK signaling and in a linear mode for 8PSK modulation. Featuring input and output terminals that are internally matched to 50 ohms, the PAM is designed to be the final amplification stage in a dual-mode GSM/EDGE mobile transmit lineup operating in the 824 MHz to 915 MHz (low) and 1710 MHz to 1910 MHz (high) bands.

### 3. TECHNICAL BRIEF

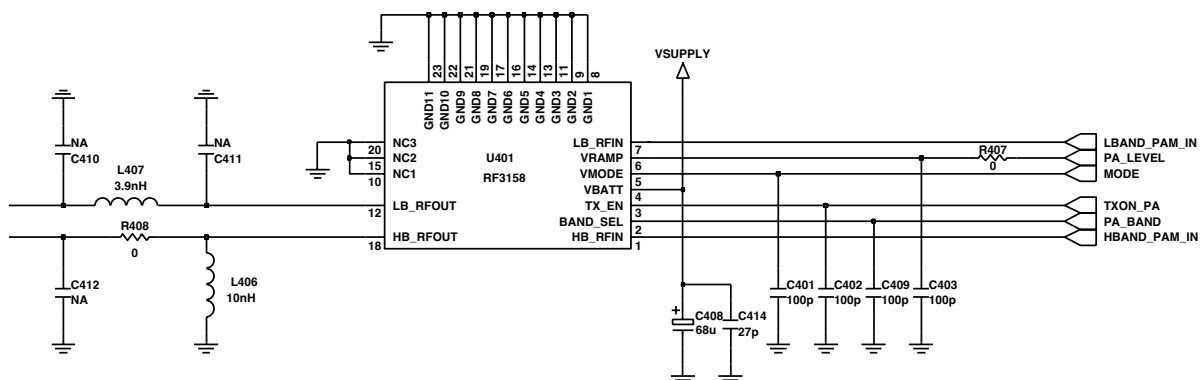
PIN	Function	Description
1	HB_RFIN	RF input to the High-band PA
2	BAND_SEL	Logic low=low band, Logic high=high band select
3	TX_EN	PA Enable
4	VBATT	Main supply
5	VMODE	Logic low=GMSK mode, Logic high=8PSK mode select
6	VRAMP	Ramped burst pin
7	LB_RFIN	RF input to the Low-band PA
8,9,10,11	GND	Ground
12	LB_RFOUT	RF output from the low-band PA
13,14,15,16,17	GND	
18	HB_RFOUT	RF output from the high-band PA
19,20,21,22,23	GND	

**Table 13 PAM pin description**

#### 3.26.1 Dual Mode Operation

When VMODE is low, the voltage on VRAMP is used to regulate the PA collector voltage which directly controls the output power. When VMODE is high, the PA collector voltage is regulated to 3.6V, and the supply for the PA base bias can be adjusted via the VRAMP pin to optimize current drain for low or high power ranges. In addition, in 8PSK mode, the first stage of the low band PA is bypassed to decrease gain, but in high band, the PA operates with all stages.

MODE	VMODE	RF INPUT	VRAMP	TX ENABLE
GSM	Low	Fixed	Ramp Burst Control	High
EDGE	High	Ramp Burst Control	Control amp bias current	High



**Figure 42 PAM schematic**

### 4. PCB layout

#### 4.1 Main & Sub PCB component placement

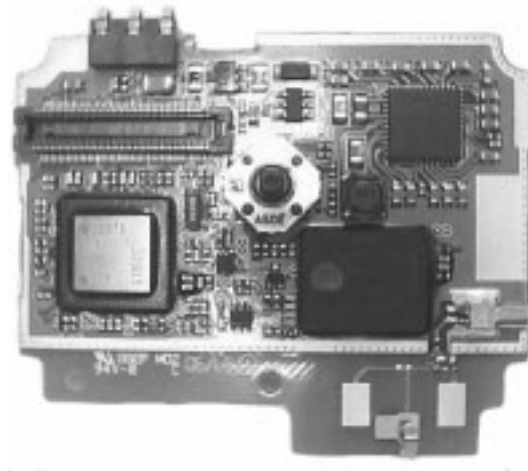


Figure 43 Main PCB top

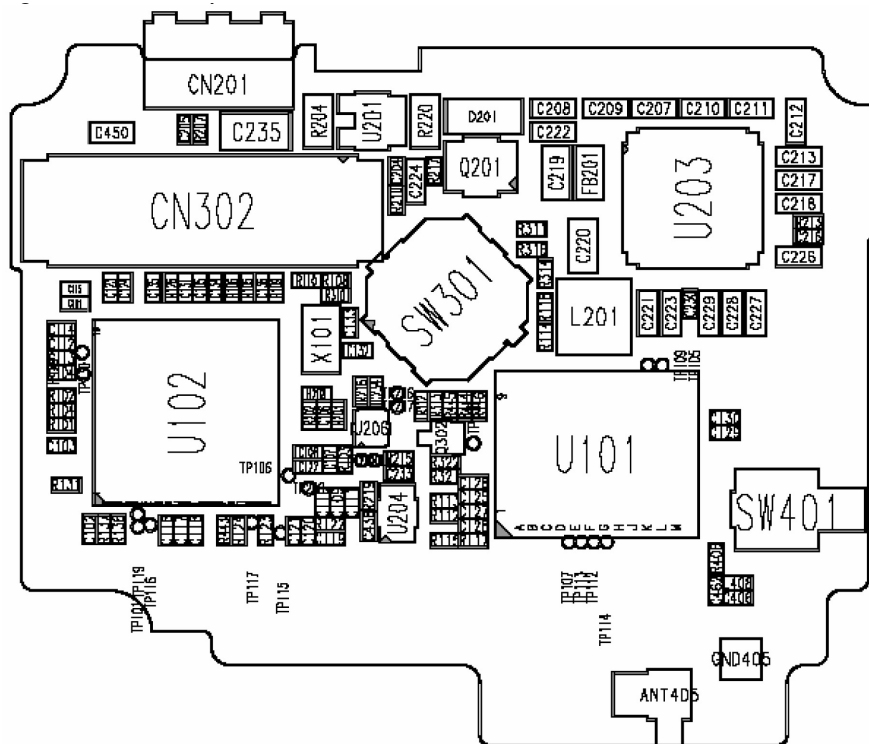
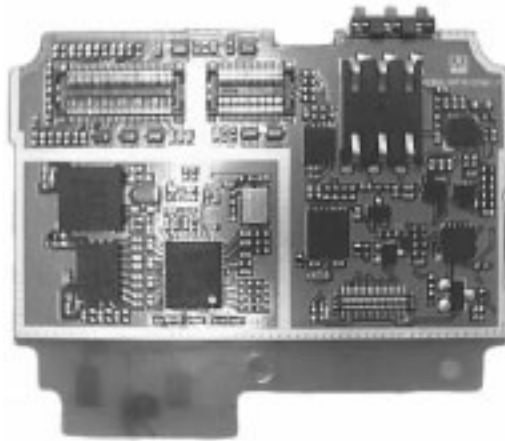


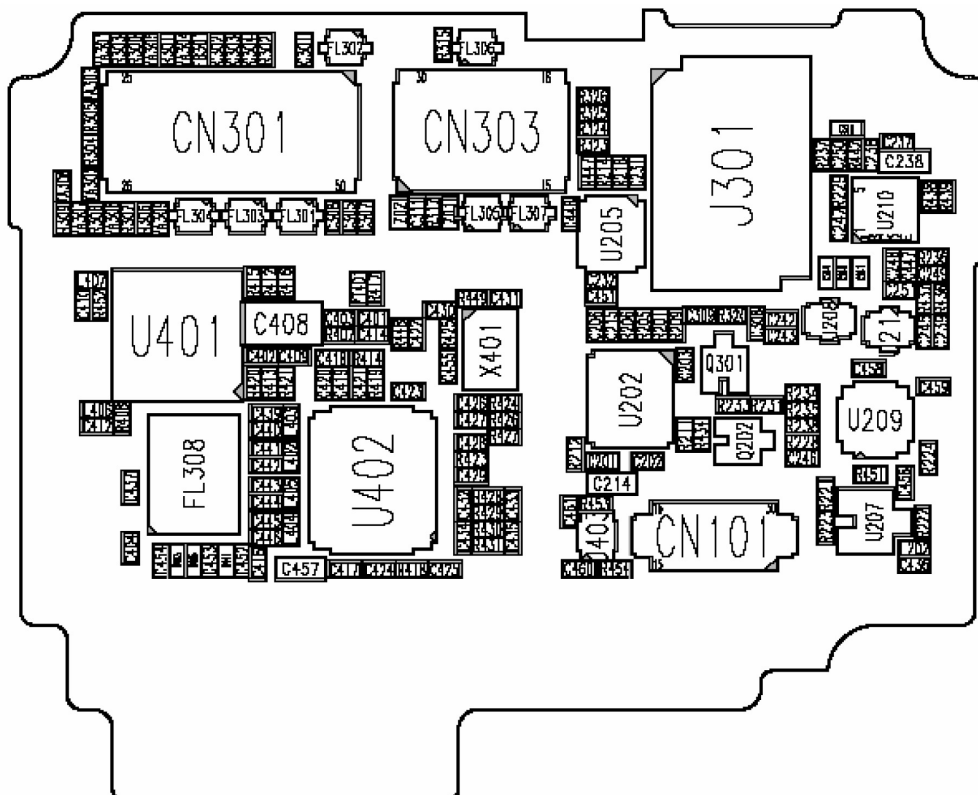
Figure 44 Main PCB top placement

## 4. PCB layout

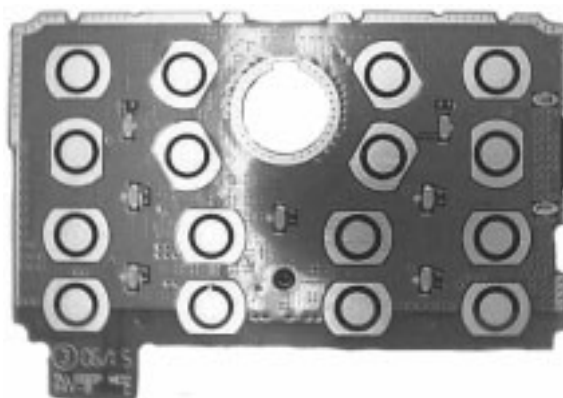
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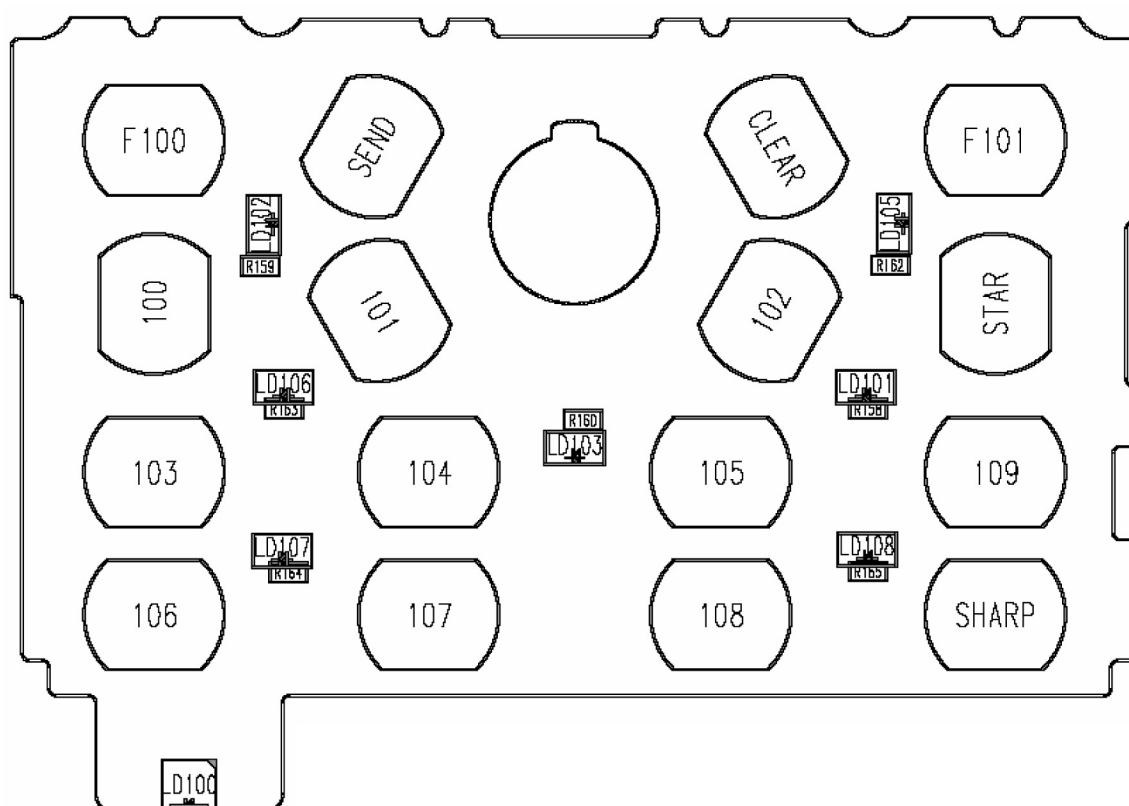
**Figure 45 Main PCB bottom**



**Figure 46 Main PCB bottom placement**

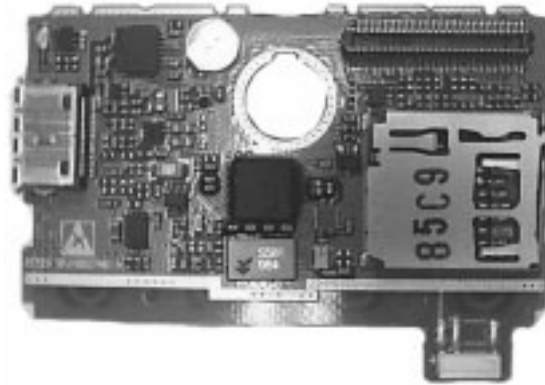


**Figure 47 Sub PCB top**

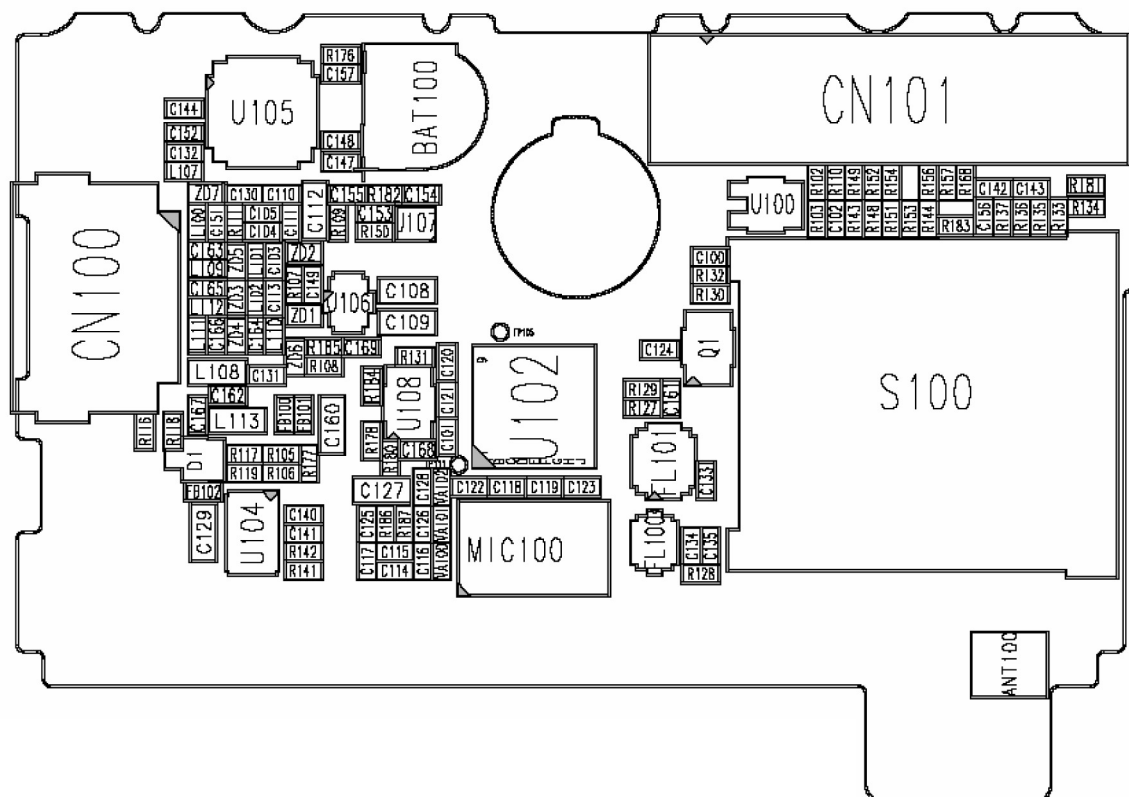


**Figure 48 Sub PCB top placement**

## 4. PCB layout

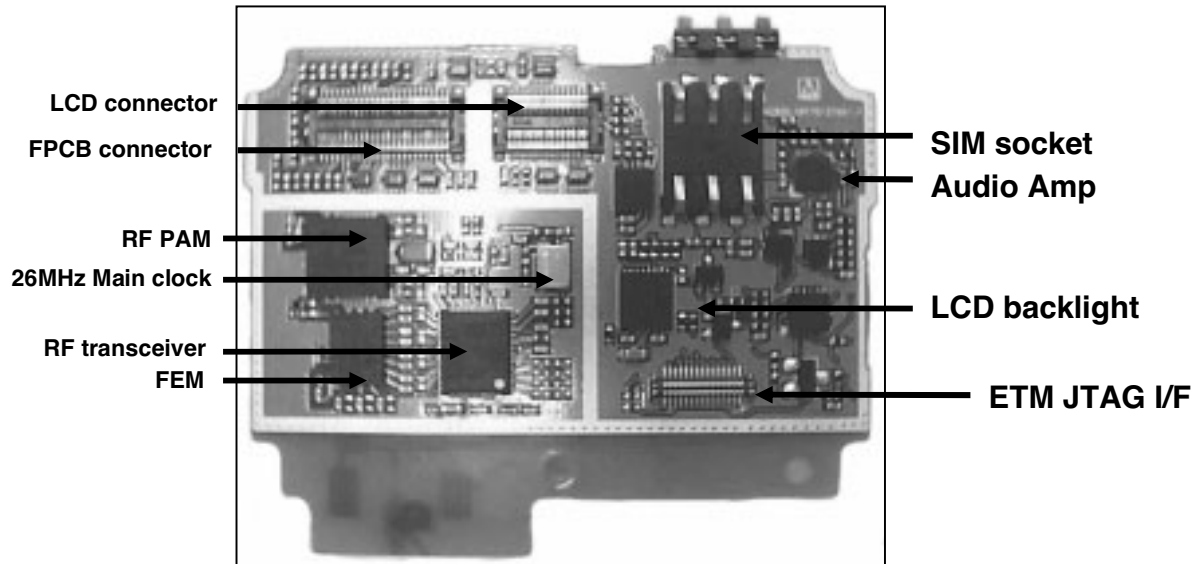
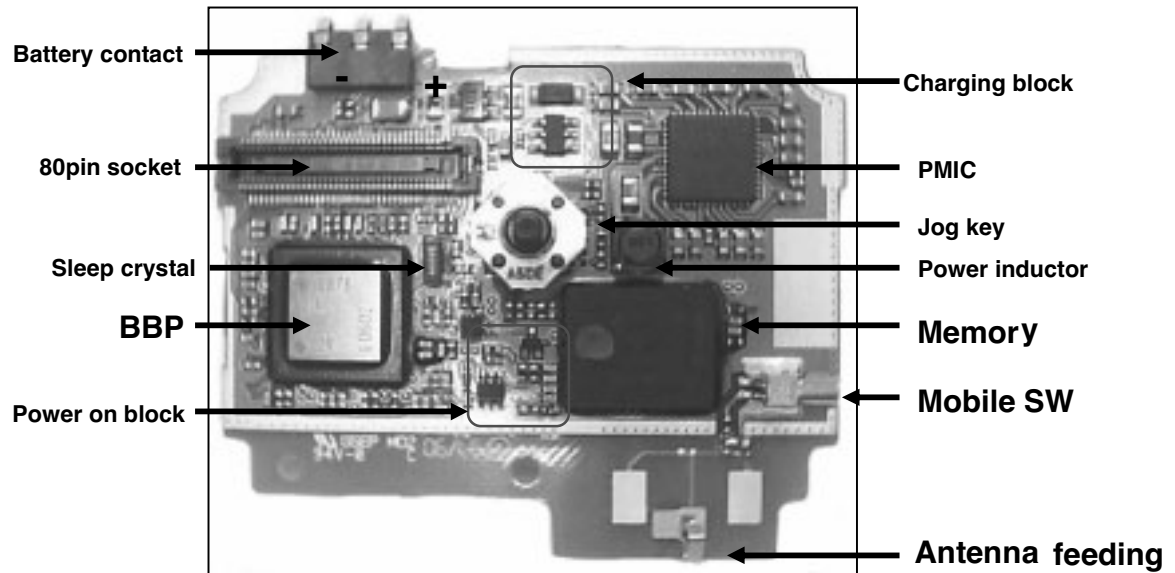


**Figure 49 Sub PCB bottom**



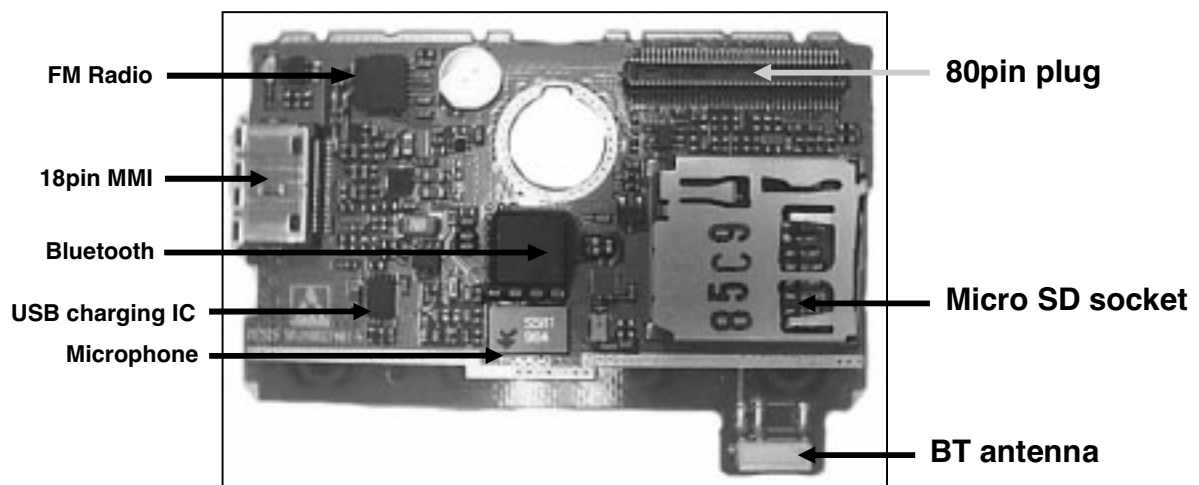
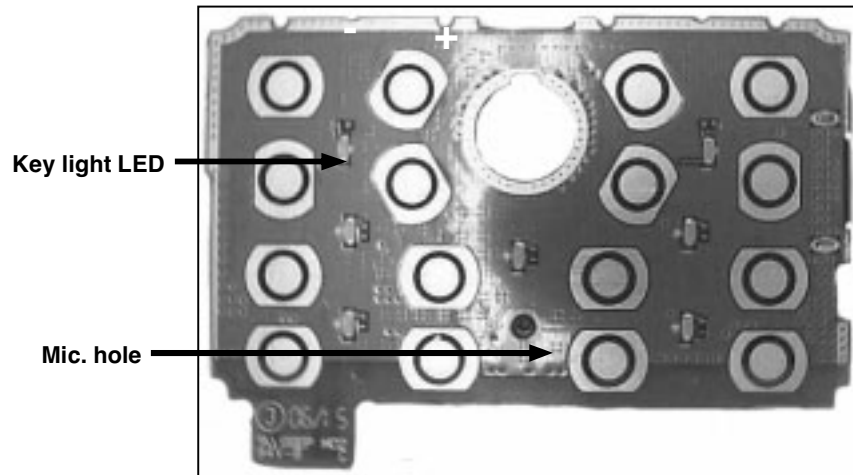
**Figure 50 Sub PCB bottom placement**

## 4. PCB layout

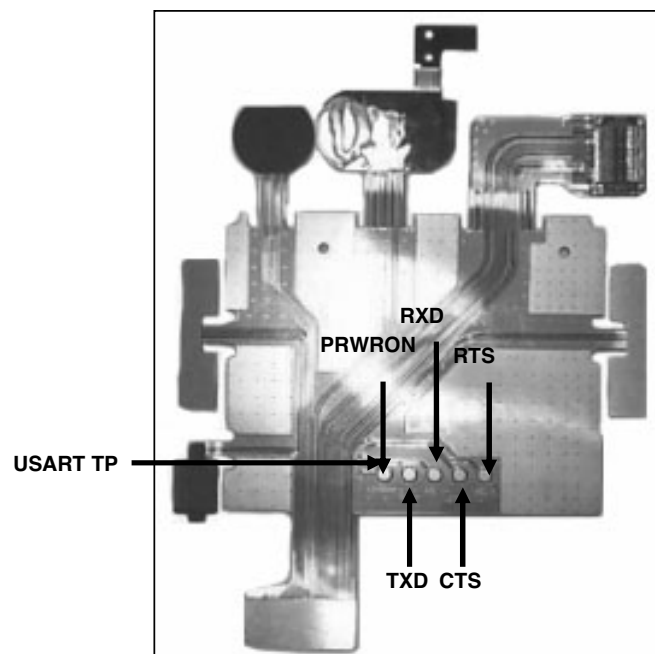
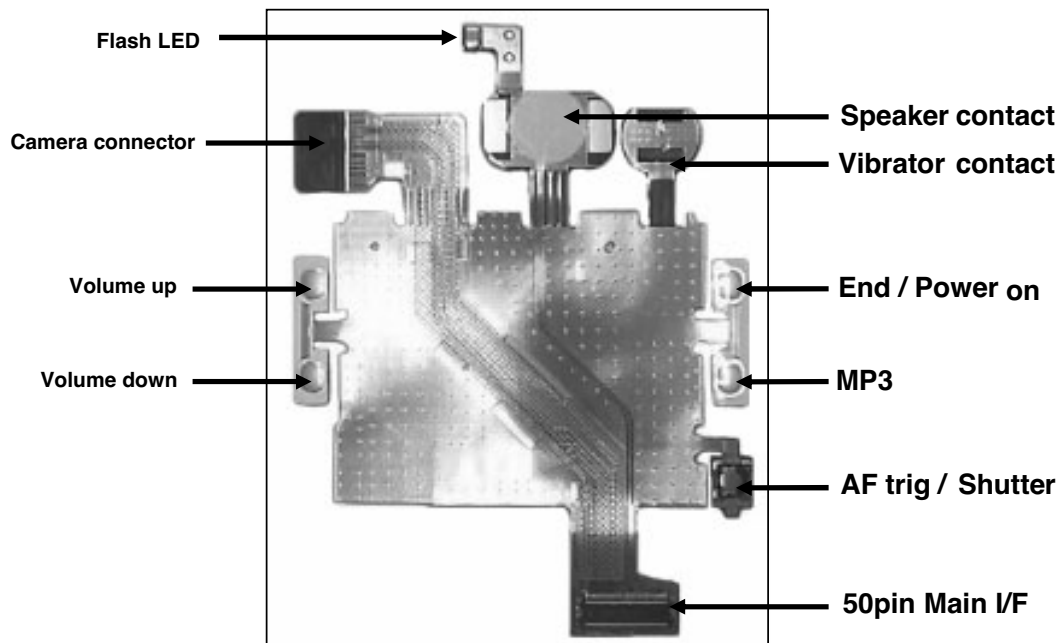


## 4. PCB layout

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## 4. PCB layout

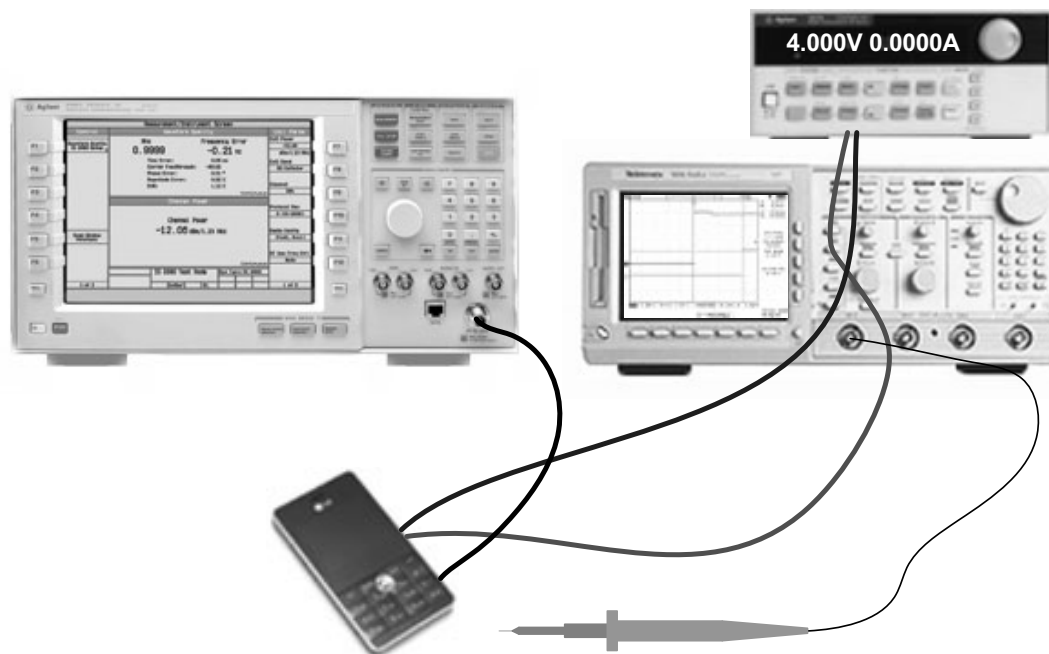


## 5. Trouble shooting

---

## 5. Trouble shooting

### 5.1 Trouble shooting test setup



**Figure 51 Equipment setup**

Power on all of test equipment

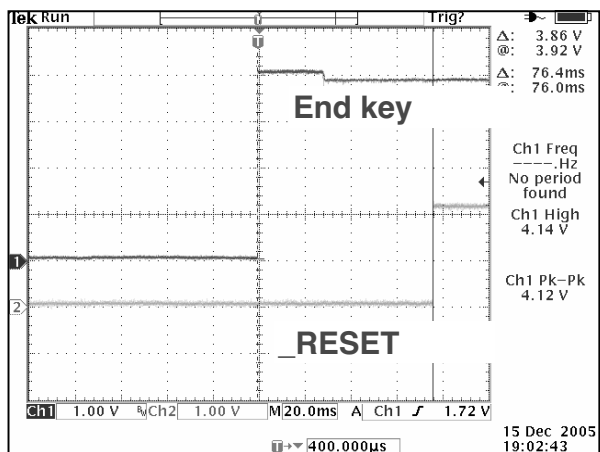
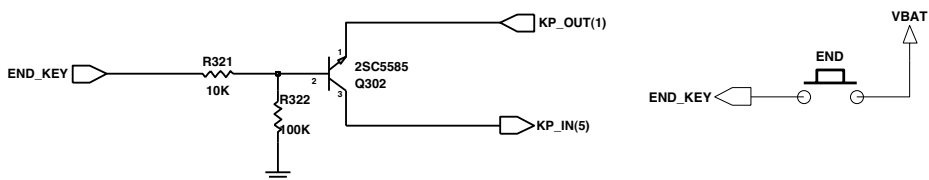
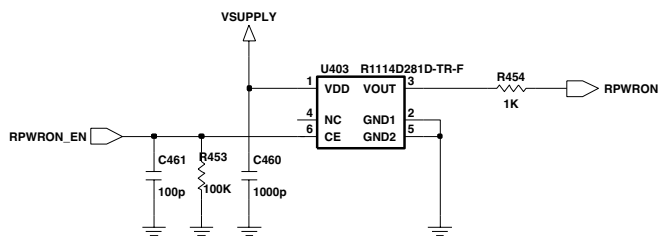
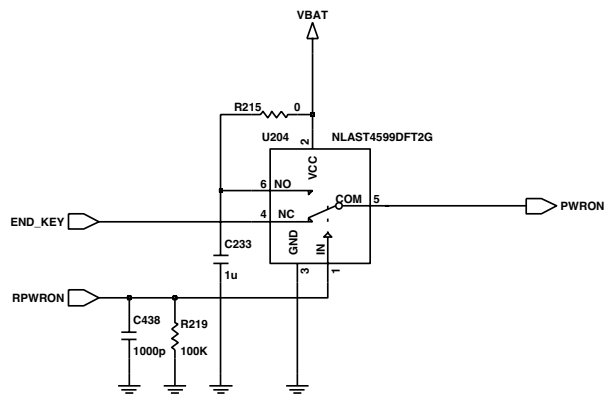
- Connect PIF-UNION JIG or dummy battery to the DUT for power up.
- Connect mobile switch cable between Communication test set and DUT when you need to make a phone call.
- Follow trouble shooting procedure

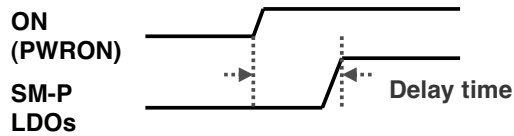
### 5.2 Power on Trouble

#### Check Points

- Battery Voltage( Need to over 3.35V)
- Power-On Key detection (PWRON signal)
- Outputs of LDOs from PMIC

## 5. Trouble shooting

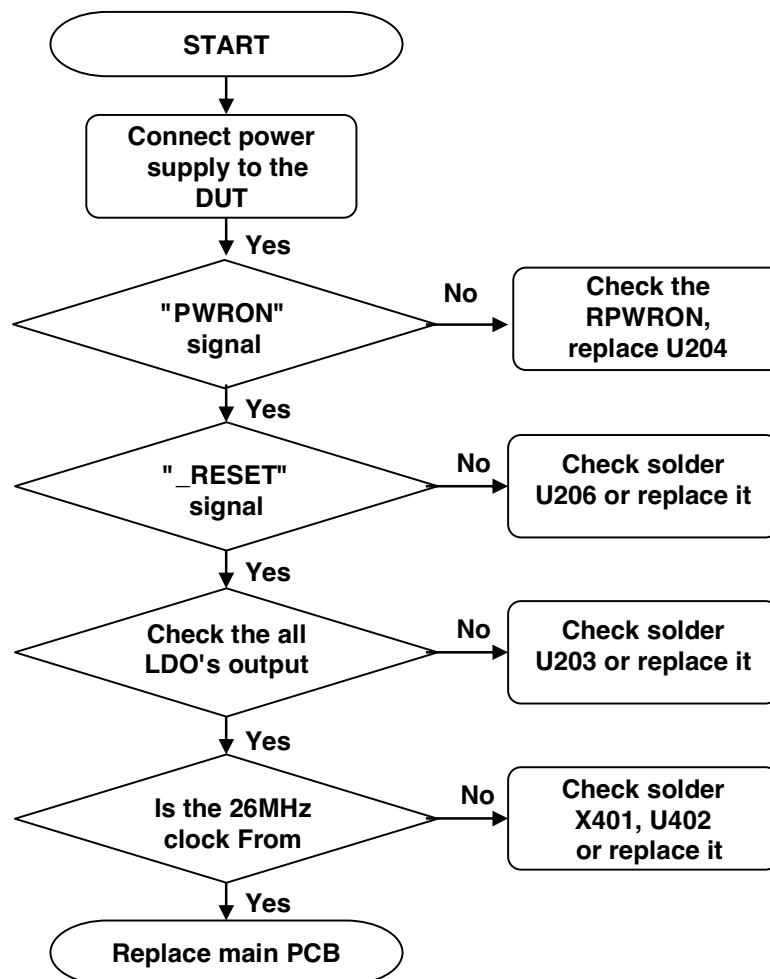




- 78 -

## 5. Trouble shooting

---




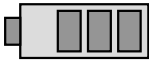
## 5. Trouble shooting


### 5.3 Charging trouble


#### Check Points

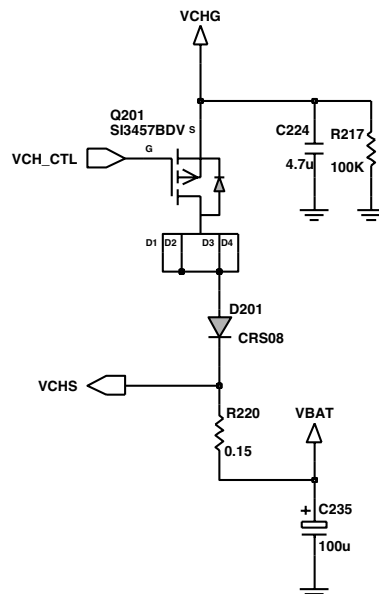
- Connection of TA (check TA voltage 4.8V)
- Charging Current Path component voltage drop
- Battery voltage
  - Charging method : CC-CV
  - Charger detect voltage : about 4.0V
  - ChCharging time : 3h under
  - Charging current : 500mA
  - Cutoff current : 100mA
  - Low battery alarm
    - Idle : 3.62V
    - . Dedicated : 3.50V
  - Switch-off voltage : 3.35V
  - Charging temperature ADC range
    - ~ -20°C : small charging operation.
    - -20°C ~ 60°C : charging.
    - 60°C ~ : not charging operation small charging operation.

  
**4.2V~3.86V**

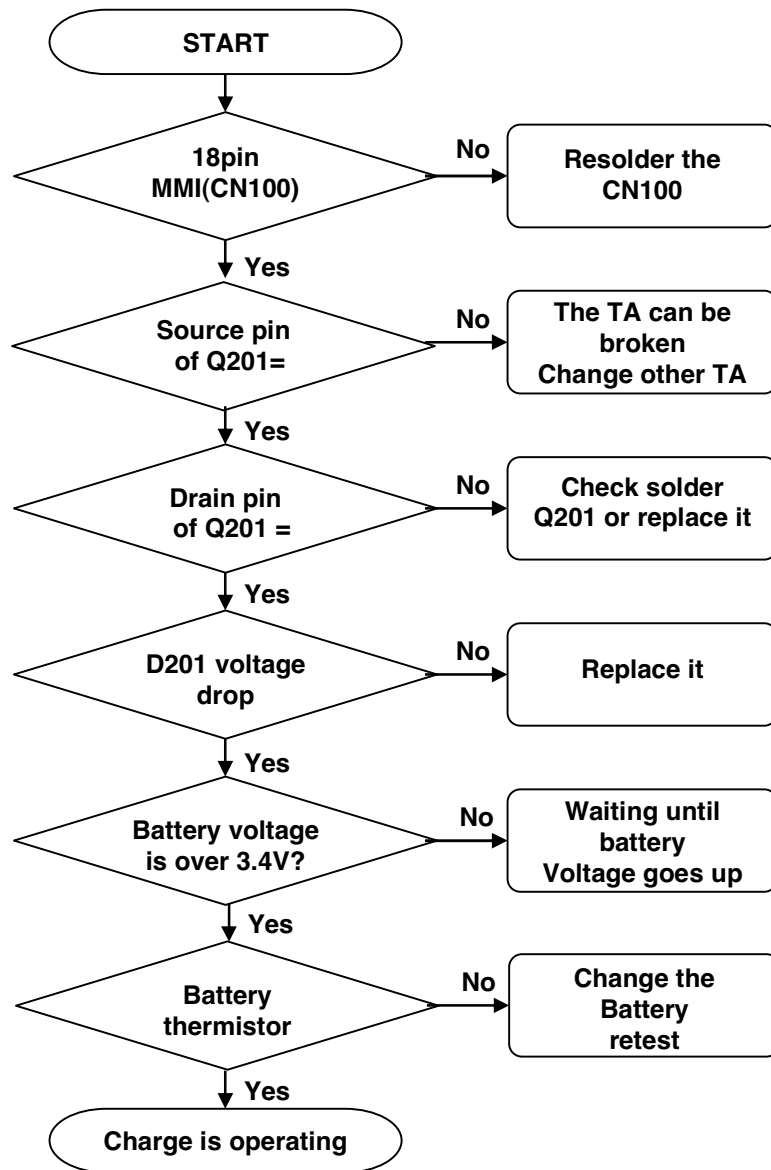
  
**3.85V~3.75V**

  
**3.75V~3.69V**

  
**3.69V~3.62V**



## 5. Trouble shooting

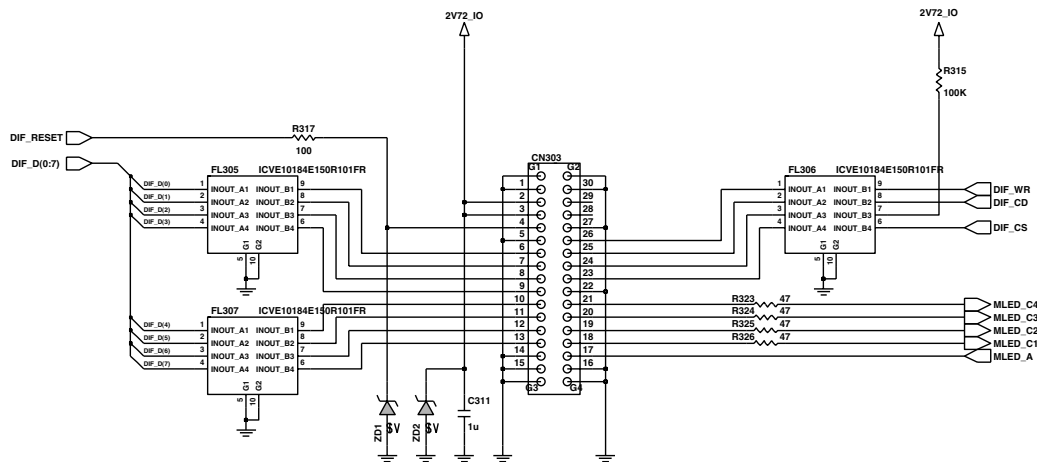


## 5. Trouble shooting

### 5.4 LCD display trouble

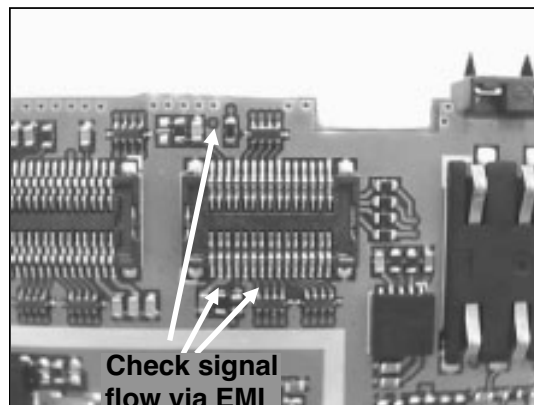
#### Check Points

- LCD assembly status ( FPCB)
- EMI filter soldering
- Connector combination

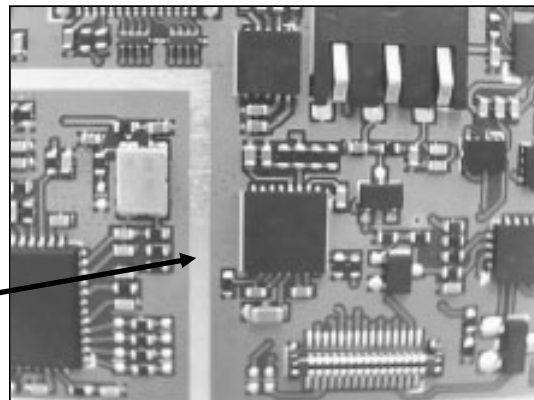


Check signal line disconnection  
of the LCD FPCB

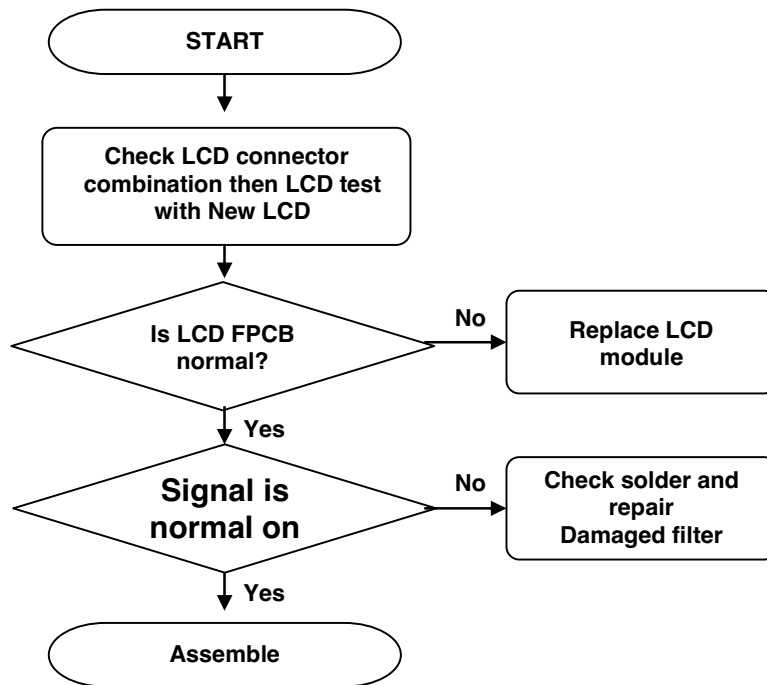
At first check the LCD back light  
enable signal



Check signal  
flow via EMI  
filter



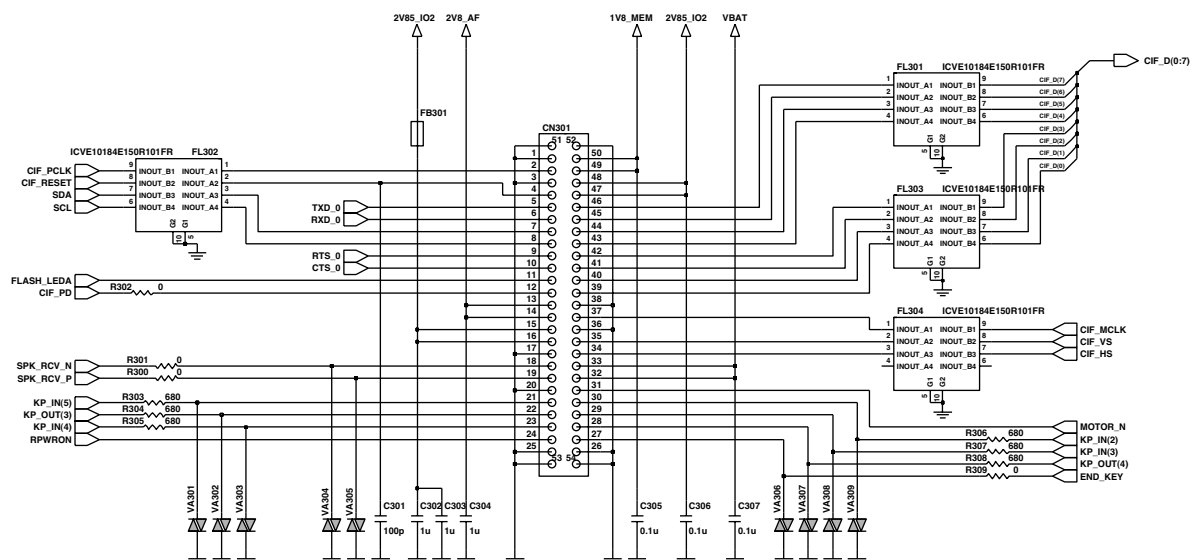
## 5. Trouble shooting



### 5.5 Camera Trouble

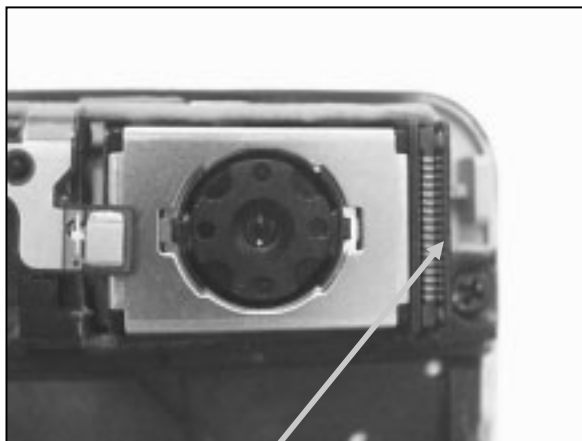
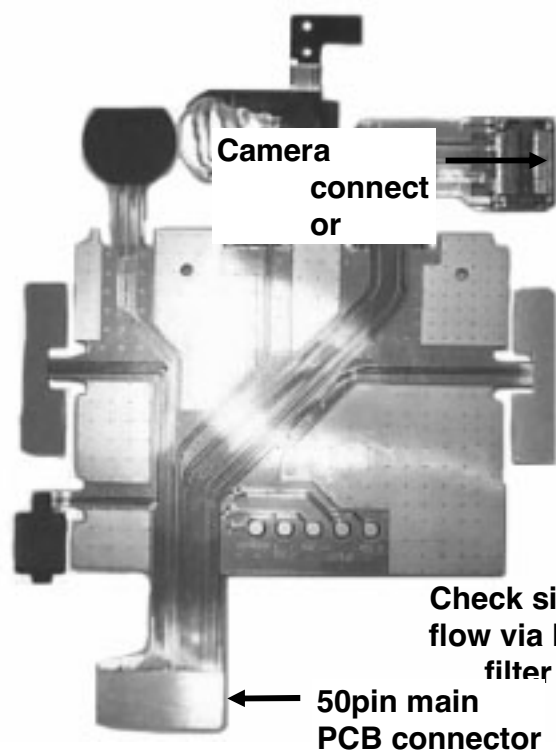
#### Check Points

- Connectors combination
- EMI filter soldering
- FPCB status

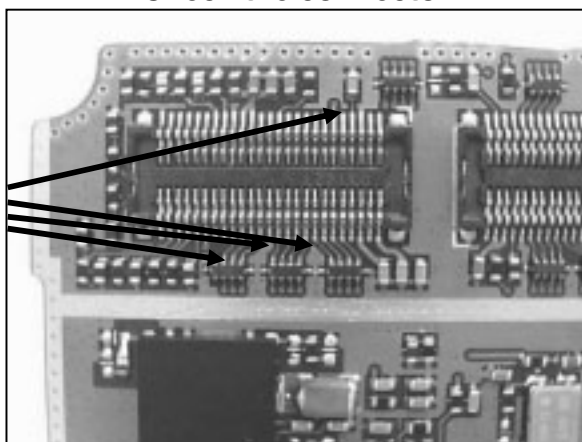


## 5. Trouble shooting

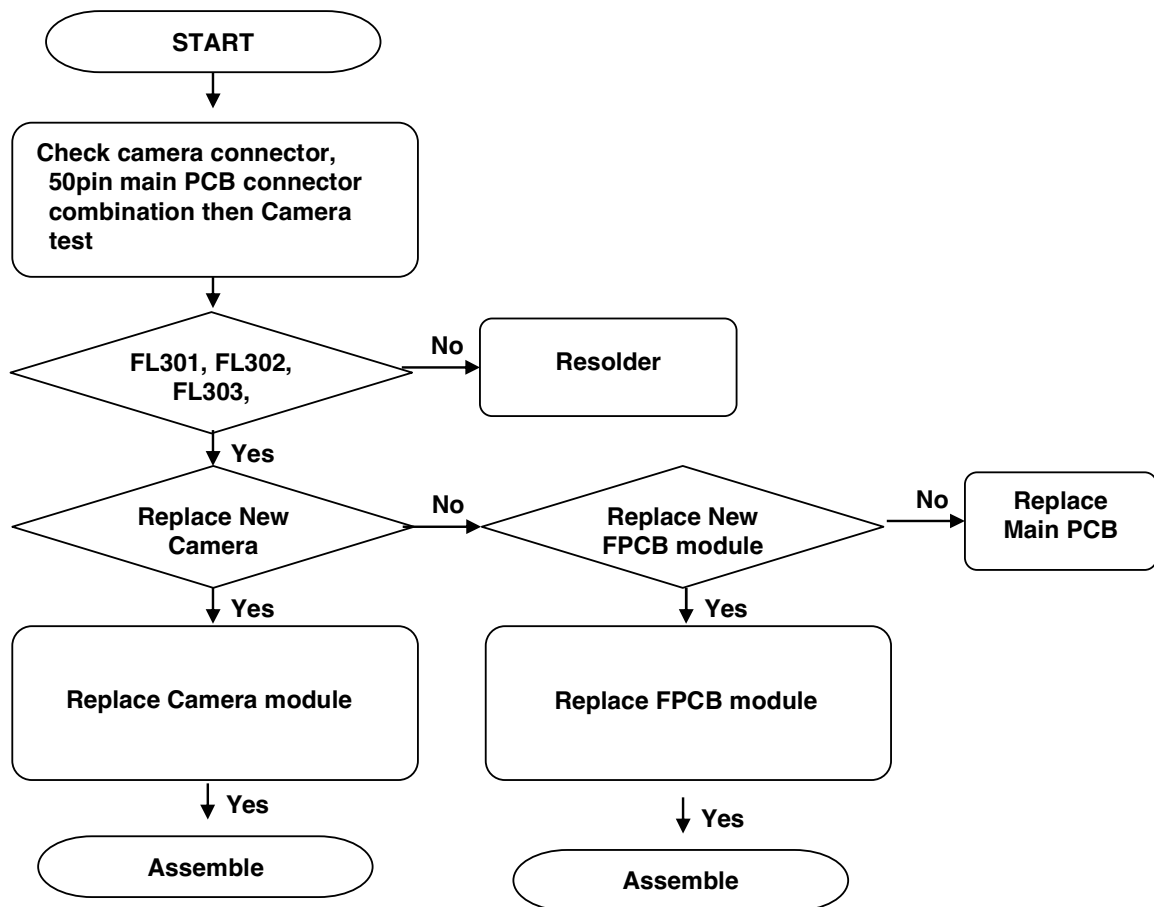
---



Check the connector



Check signal  
flow via EMI  
filter

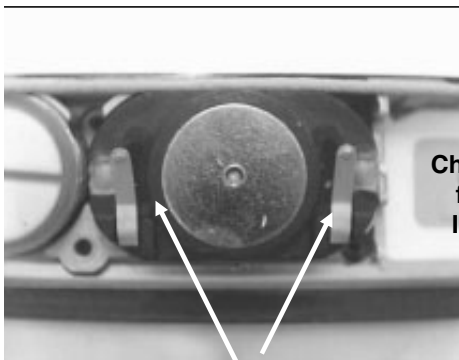
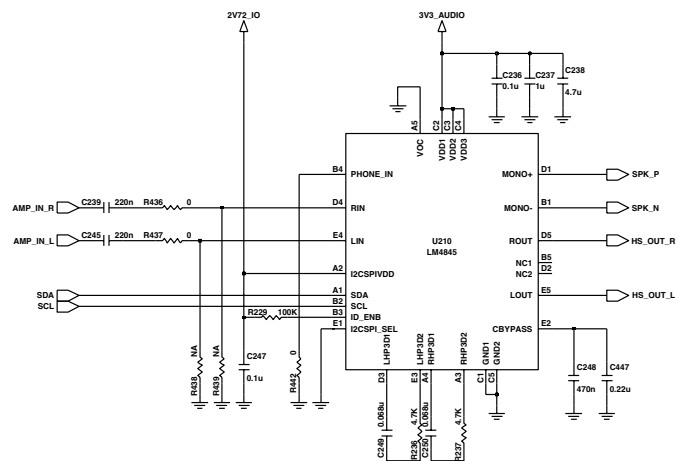
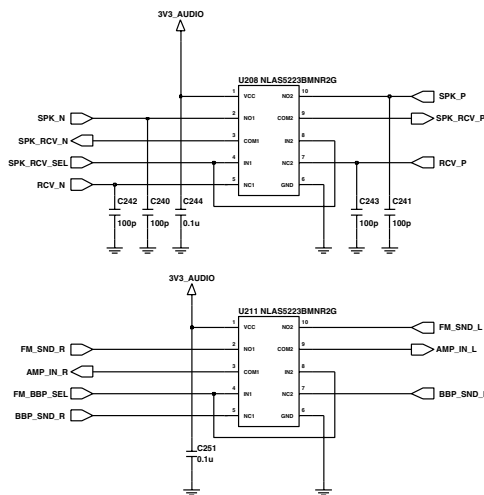


## 5. Trouble shooting

### 5.6 Receiver & Speaker trouble

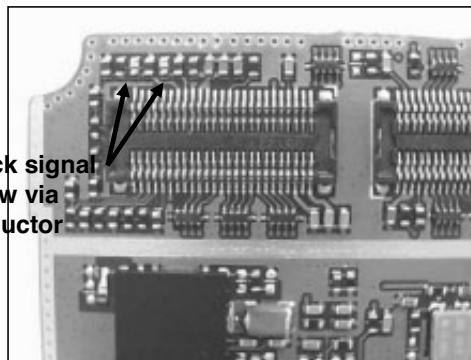
#### Check Points

- Speaker spring contact
- Audio amp soldering
- analog switch soldering



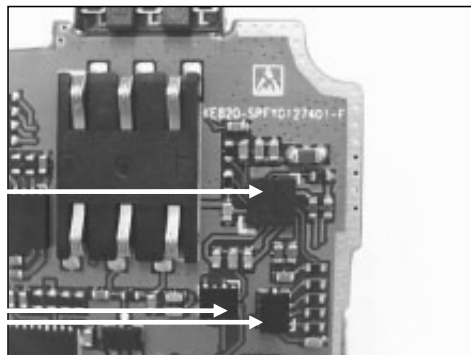
Check the contact spring tension and dust on the contact point

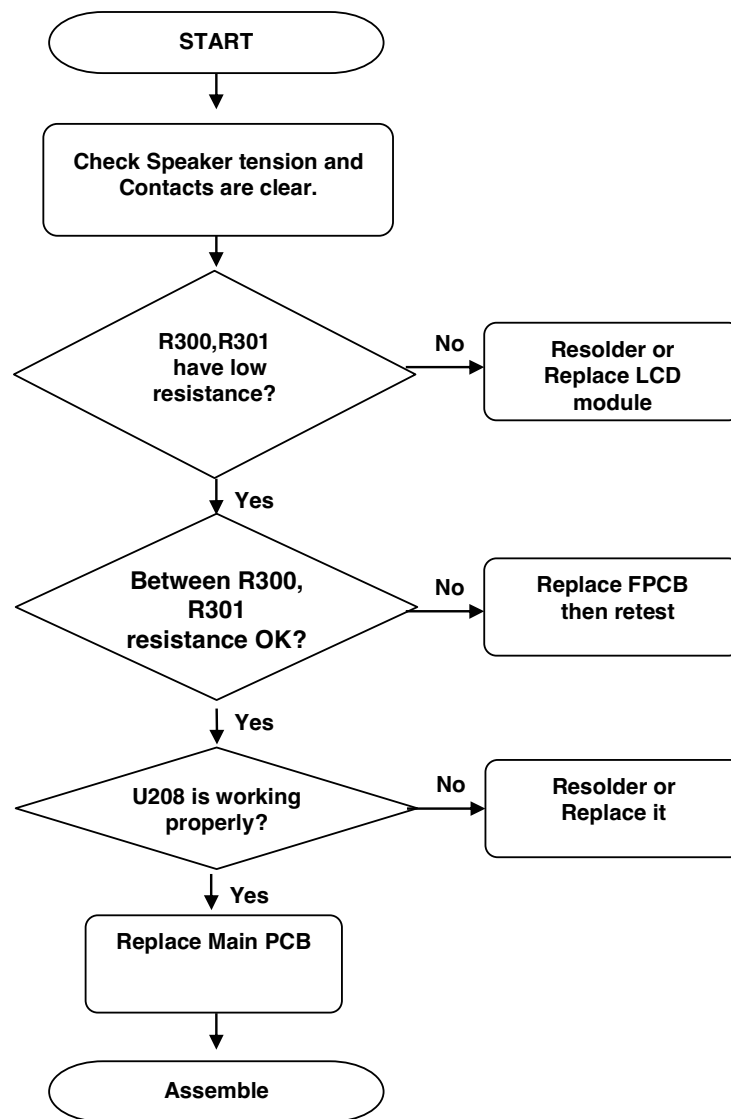
Check signal flow via Inductor



Check Audio amp, In output signal

Check the analog switches



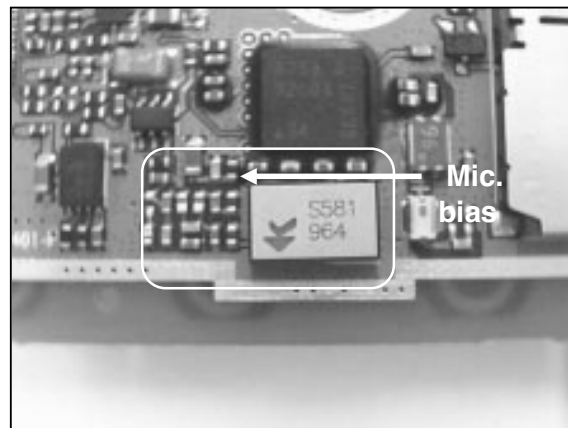
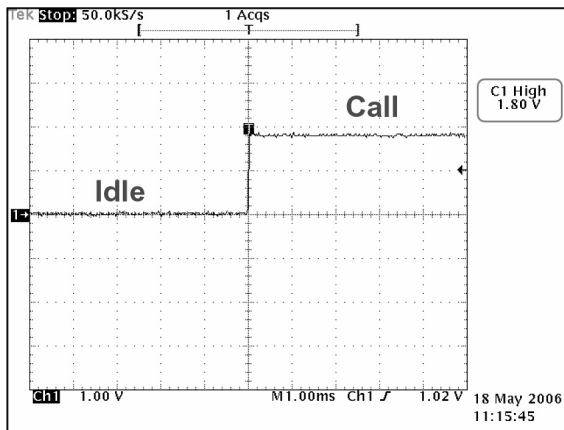
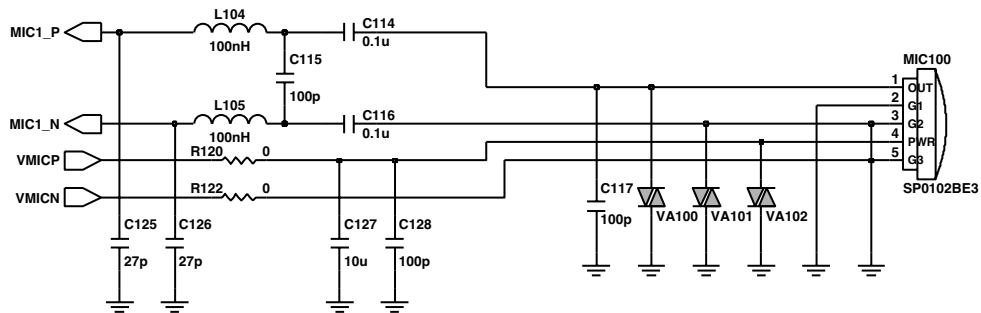


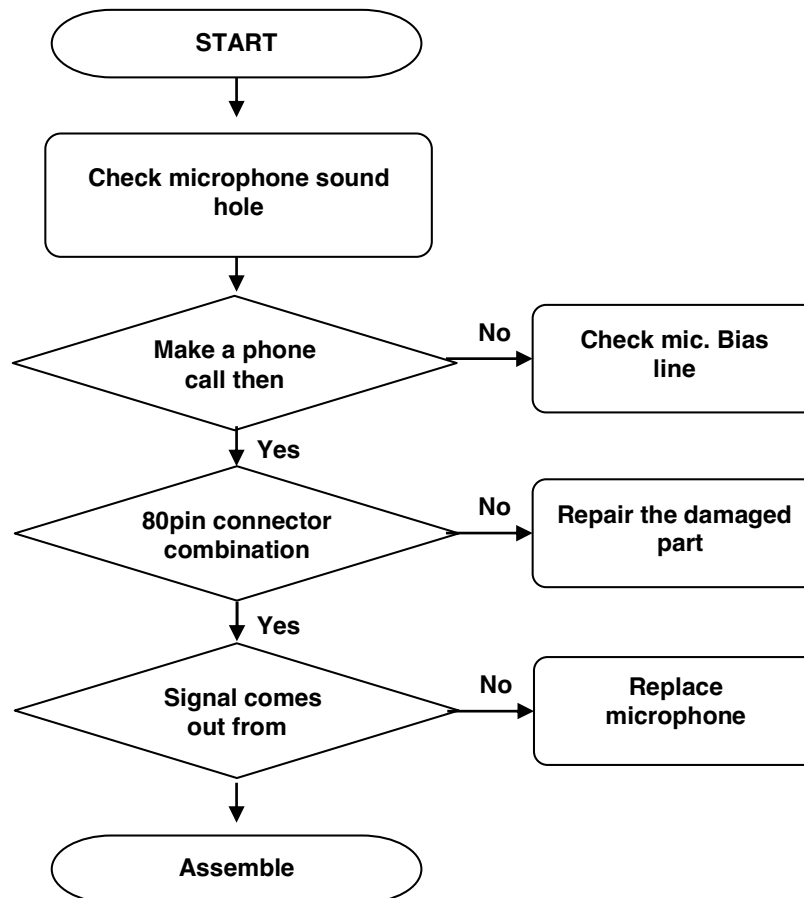
## 5. Trouble shooting

### 5.7 Microphone trouble

#### Check Points

- Microphone hole
- Mic. Bias & signal come from



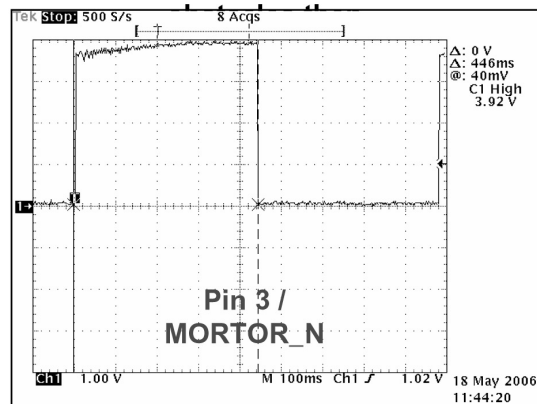
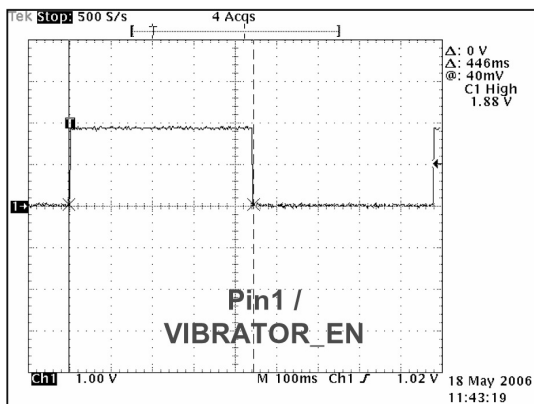
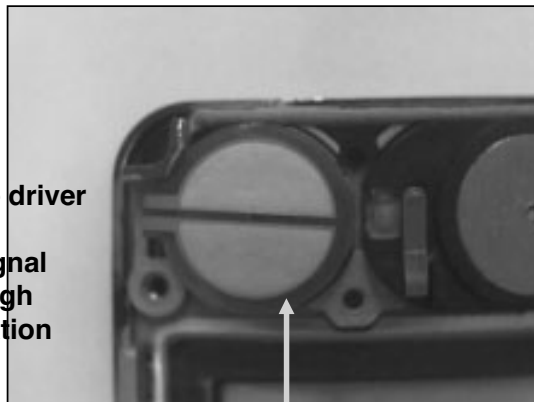
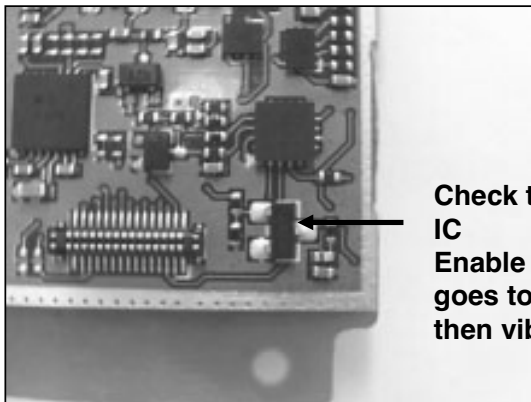
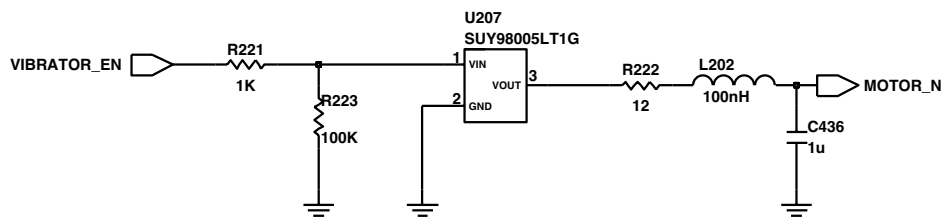


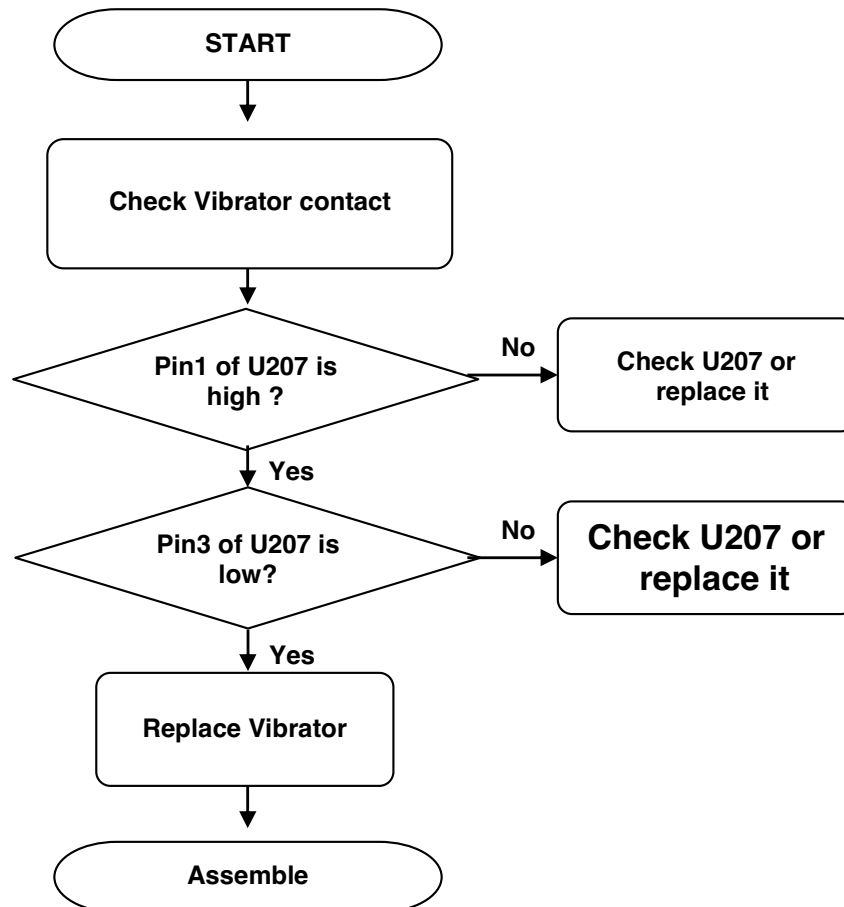
## 5. Trouble shooting

### 5.8 Vibrator trouble

#### Check Points

- Vibrator contact
- IC is working correct



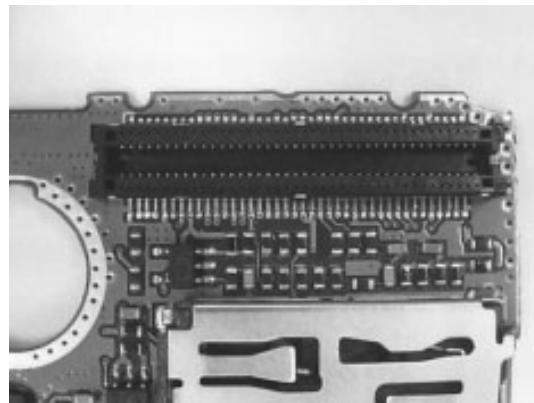
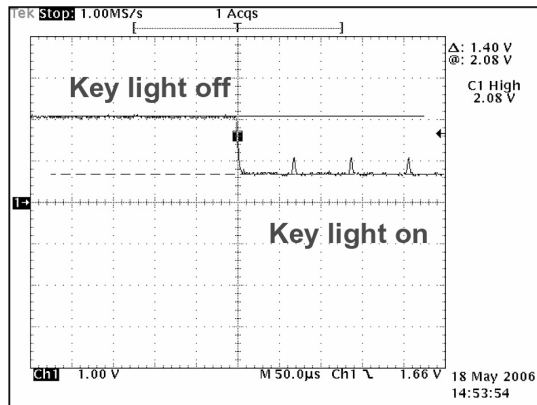
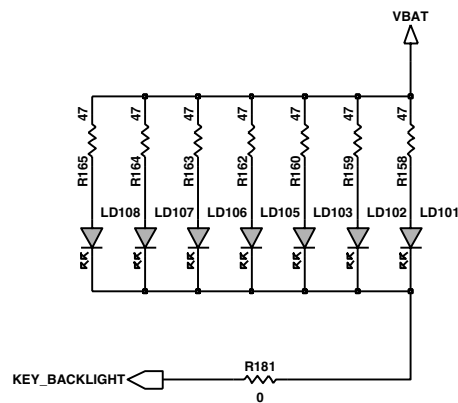


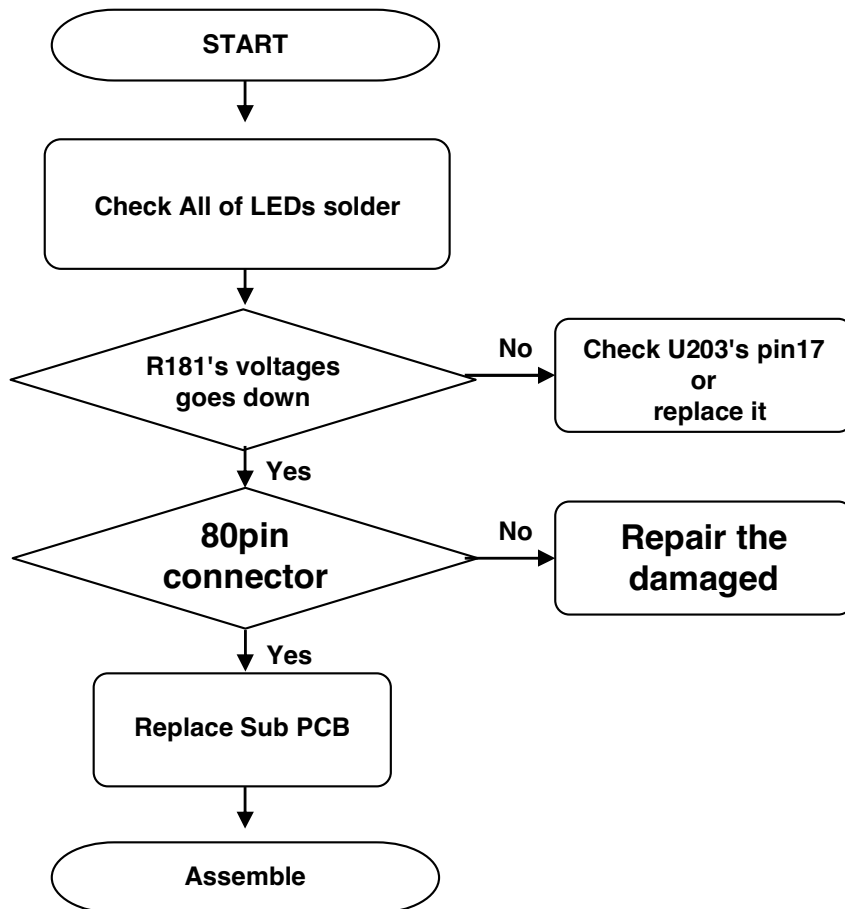
## 5. Trouble shooting

### 5.9 Keypad back light trouble

#### Check Points

- Signal path is connected well
- Control IC is working properly



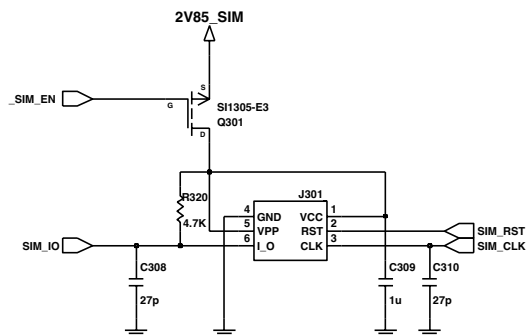


## 5. Trouble shooting

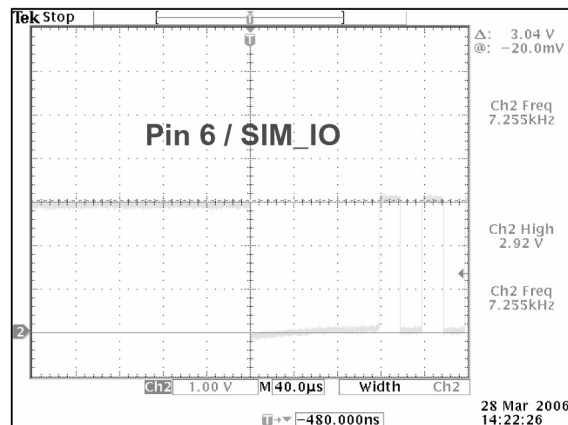
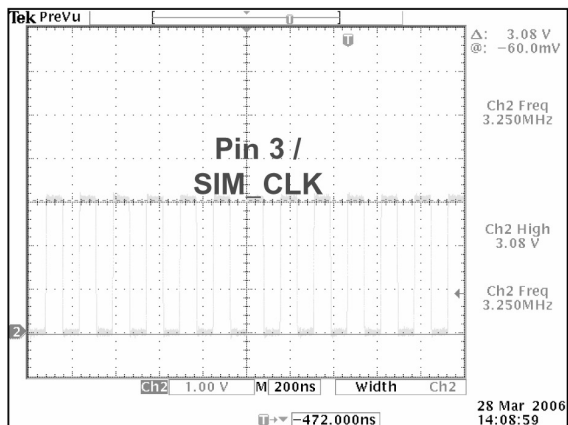
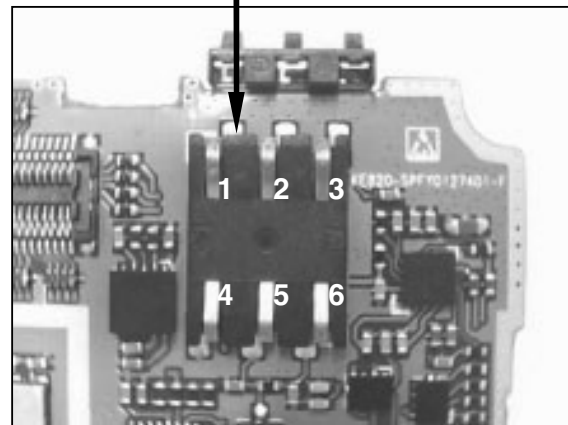
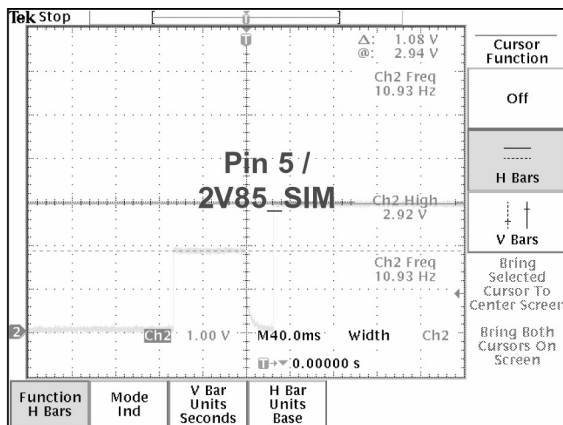
### 5.10 SIM card trouble

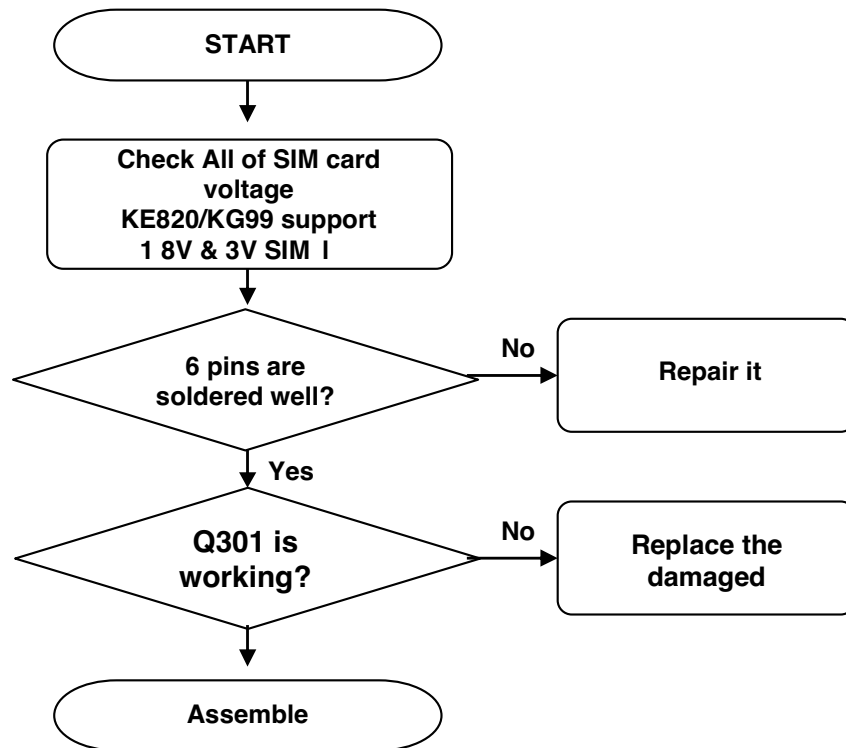
#### Check Points

- Power control FET is working
- Socket soldering
- Proper SIM is used



Check  
soldering all  
pin of socket



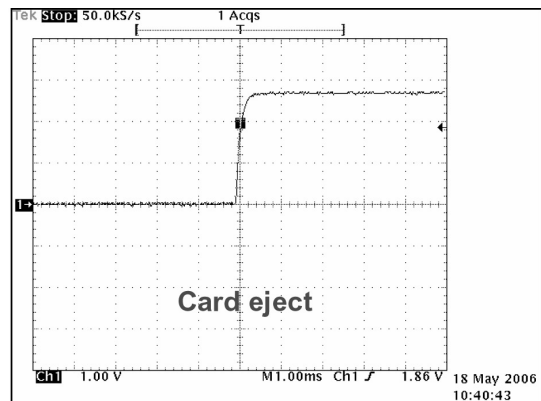
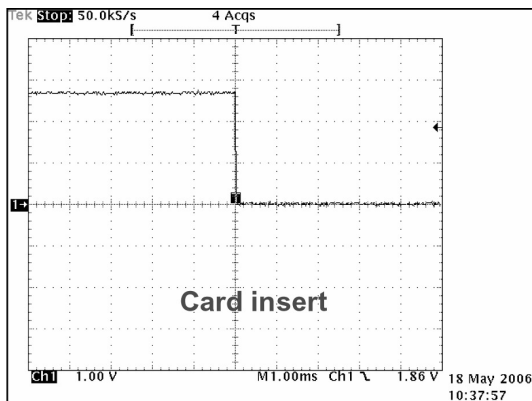
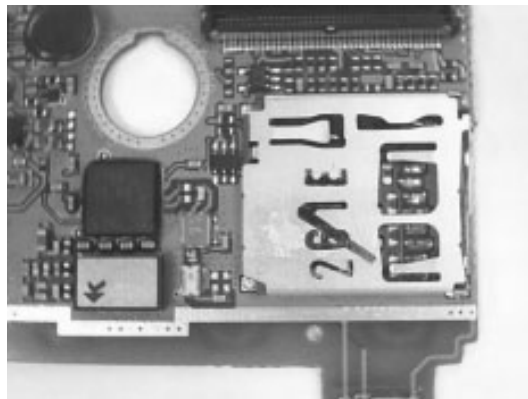
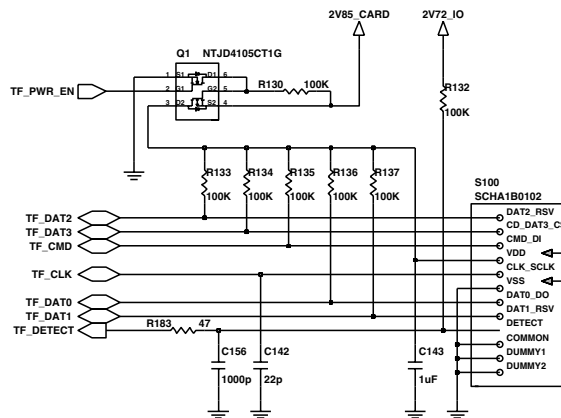


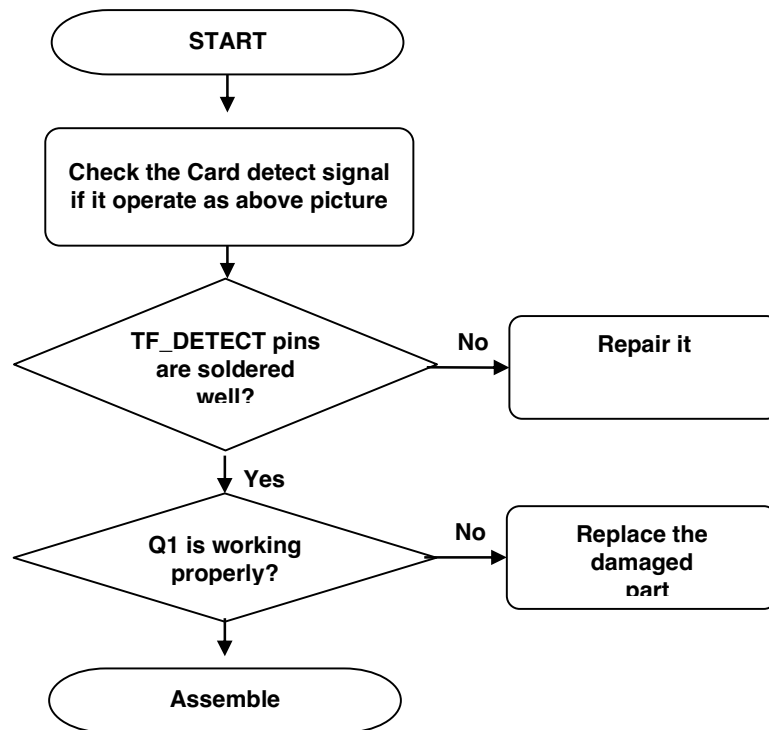
## 5. Trouble shooting

### 5.11 MicroSD trouble

#### Check Points

- Power control FET is working
- Socket soldering
- Card detect is working





5. Trouble shooting

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5.12 RF PART TROUBLESHOOTING

5.12.1 RF Components

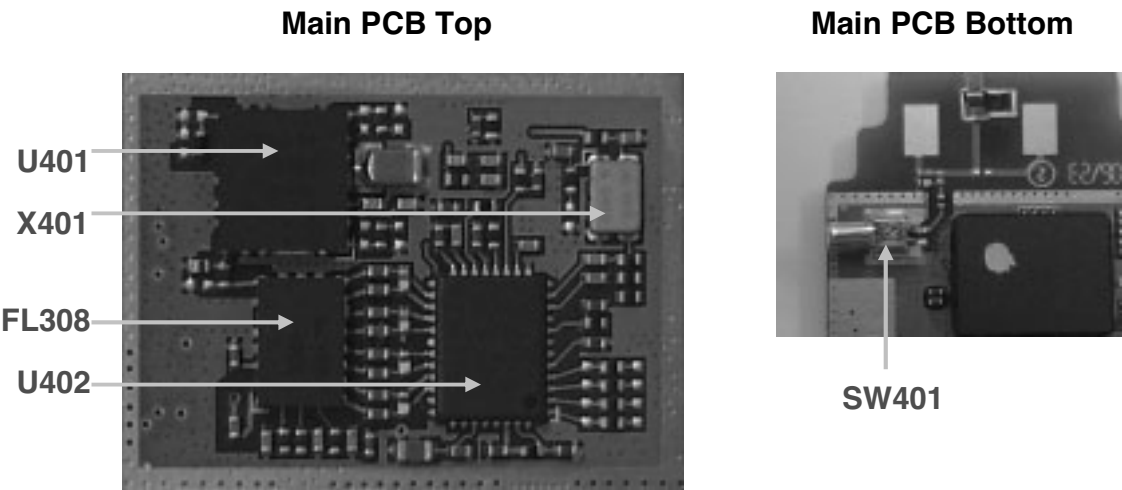
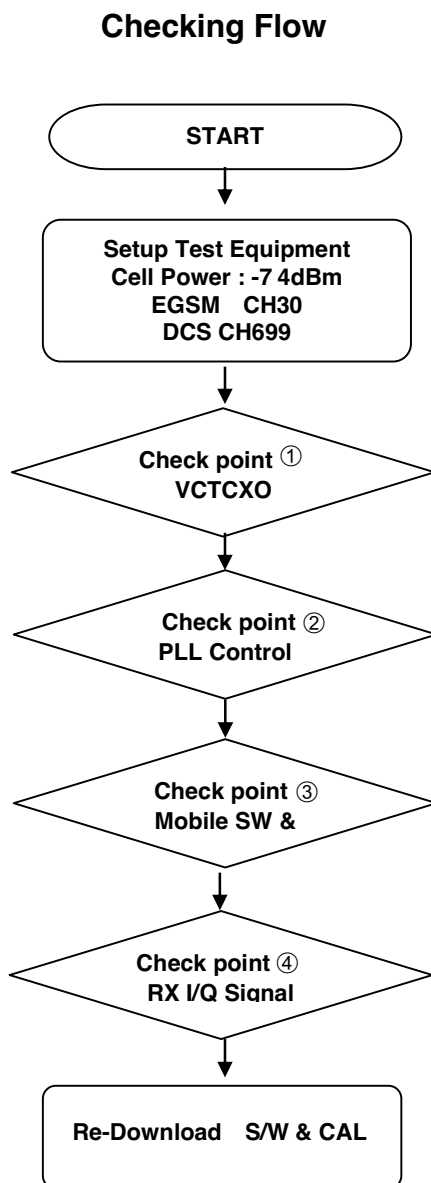


Figure 1. RF Components Placement

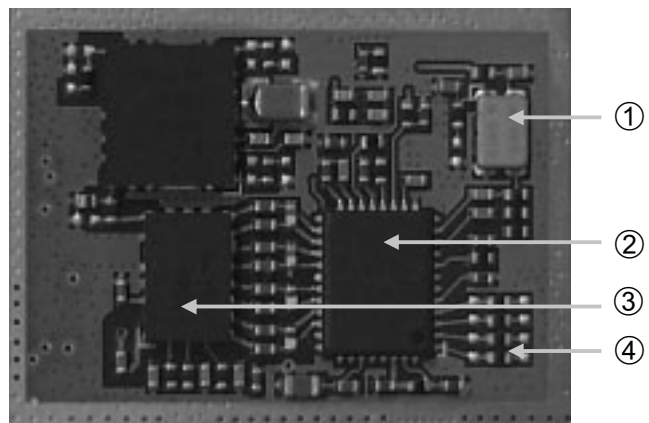
REFERENCE	PART Description
U401	PAM (Power Ampilifier Module)
X401	VCTCXO (26MHz)
FL308	FEM (Front End Module)
U402	Transceiver
SW401	Mobile Switch

Table 1. RF Components

### 5.12.2 Trouble Shooting of Receiver Part



### Checking Points



**Figure 2. Main PCB**

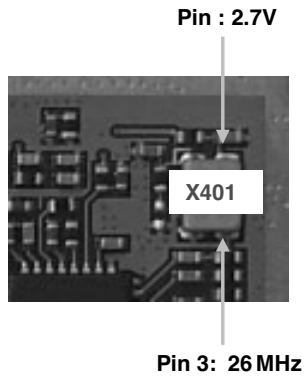


**Figure 3. Main PCB Bottom**

## 5. Trouble shooting

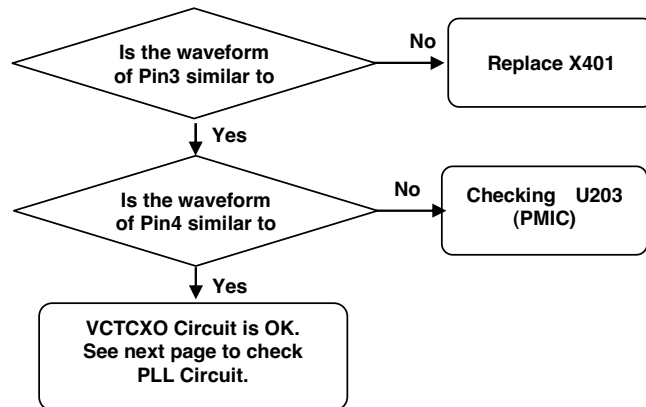
### 5.12.3 Checking VCTCXO Circuit

#### Checking Points



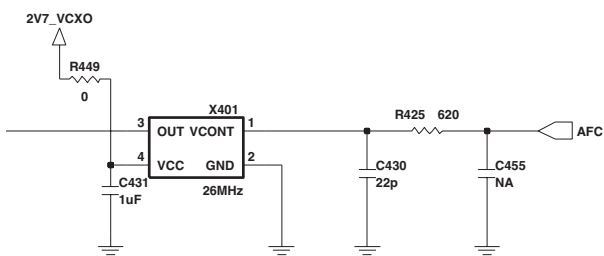
**Figure 4.**

#### Checking Flow



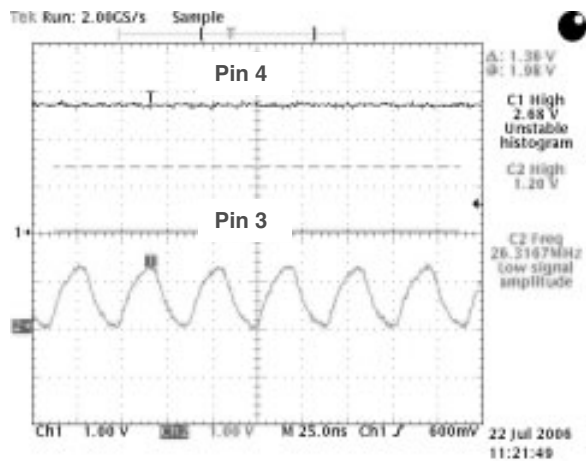
#### Circuit Diagram

##### VCTCXO



**Figure 5. VCTCXO**

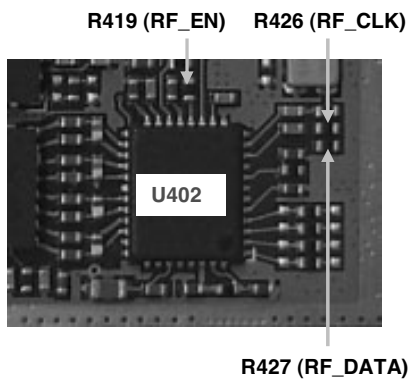
#### Waveform



**Figure 6. VCTCXO Waveform**

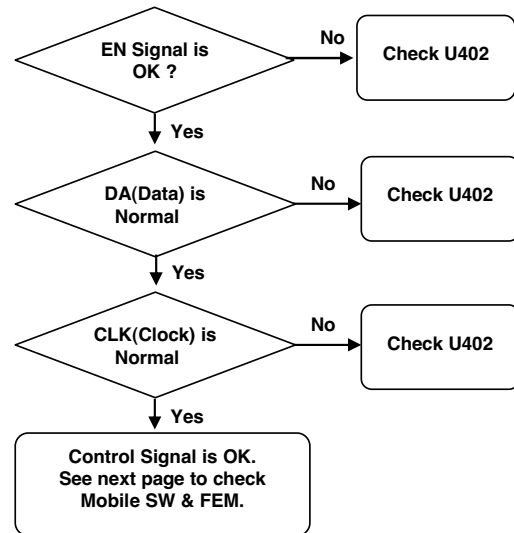
### 5.12.4 Checking PLL Control signals

#### Checking Points



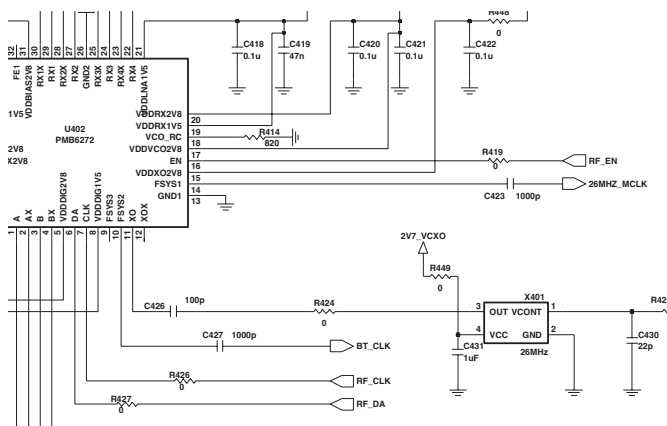
**Figure 7. Transceiver**

#### Checking Flow



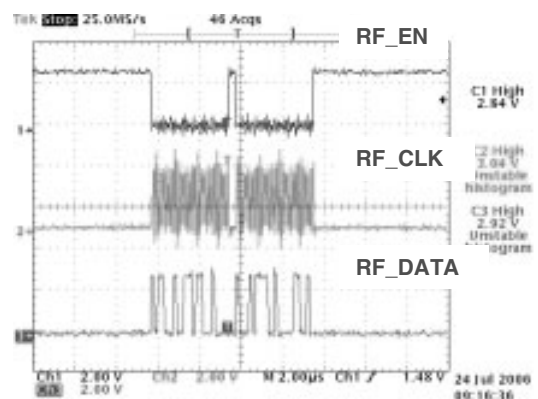
#### Circuit Diagram

#### RF Transceiver



**Figure 8. Transceiver Circuit**

#### Waveform



**Figure 9. PLL Control Waveform**

## 5. Trouble shooting

### 5.12.5 Checking Mobile SW & FEM

#### Circuit Diagram

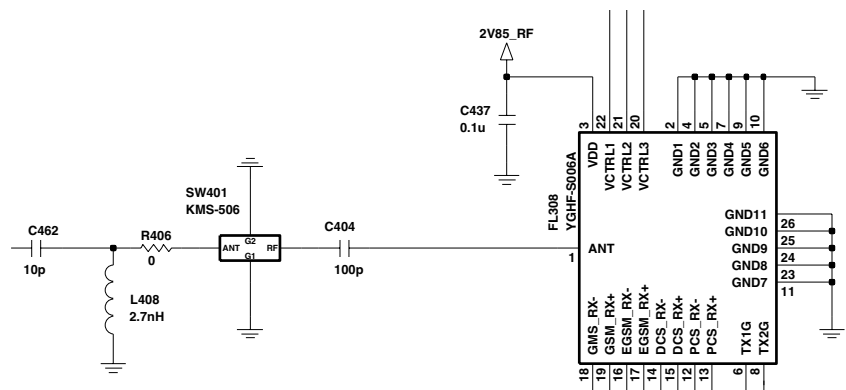


Figure 10. Mobile SW & FEM Circuit

#### Checking Points

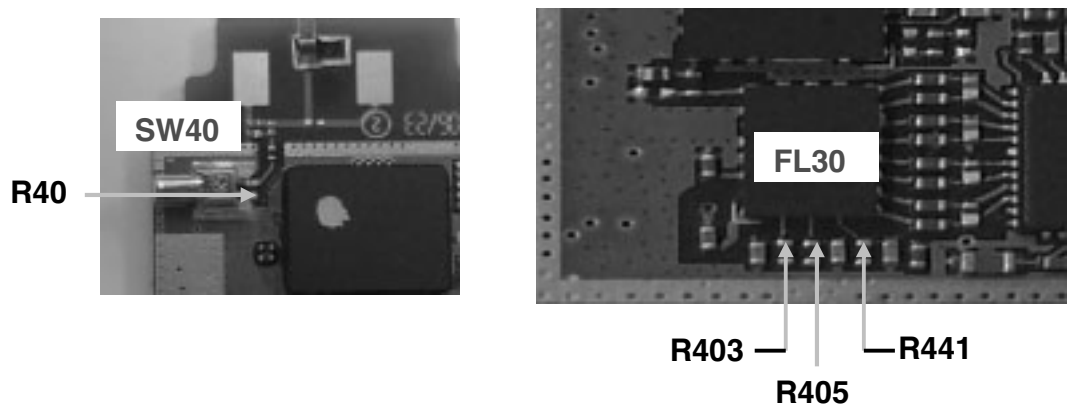
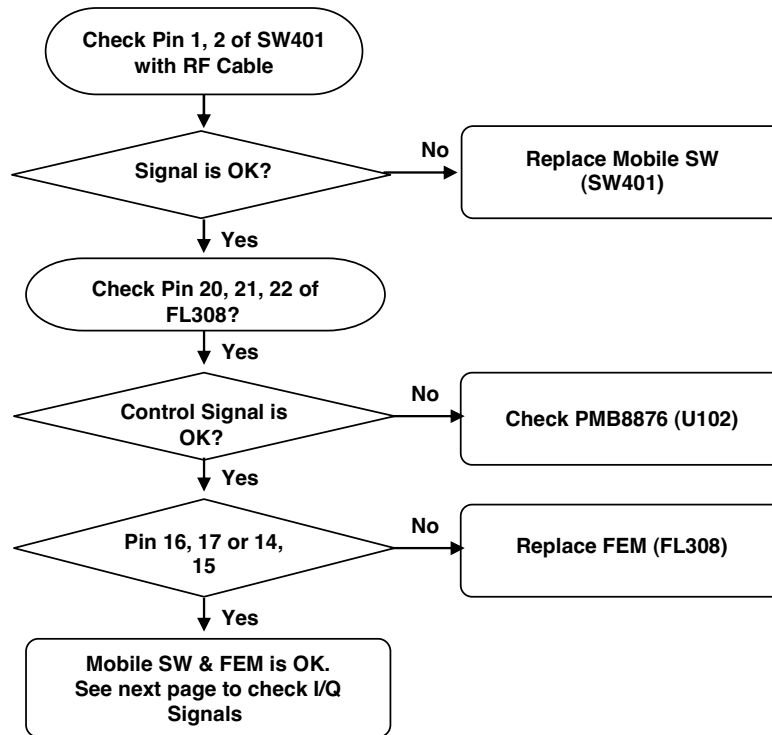


Figure 11 Mobile SW &

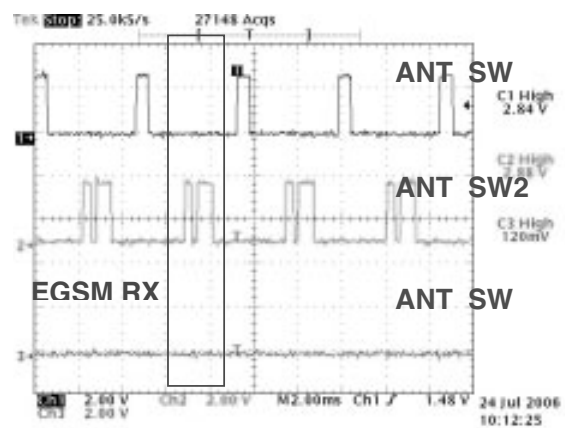
RX Mode	EGSM	DCS	PCS
ANT_SW1	Off	Off	Off
ANT_SW2	On	Off	Off
ANT_SW3	Off	On	Off

Table 2. FEM RX Control Logic

### Checking Flow



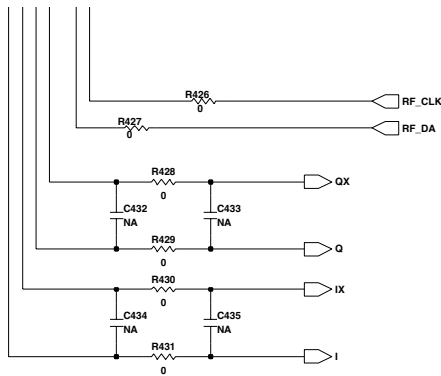
**Figure 12 Mobile SW**



**Figure 13 FEM Control Signals**

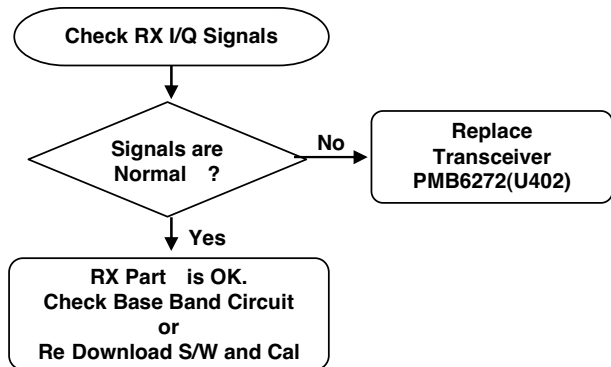
## 5. Trouble shooting

### 5.12.6 Checking RX I/Q Signals

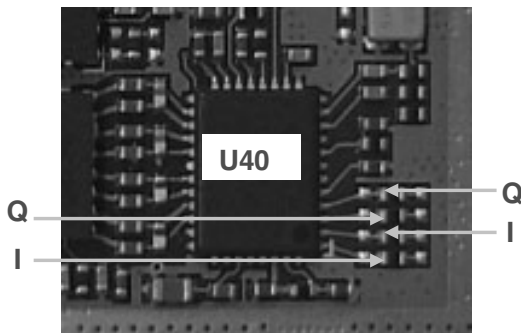


**Figure 14. RX I/Q Circuit**

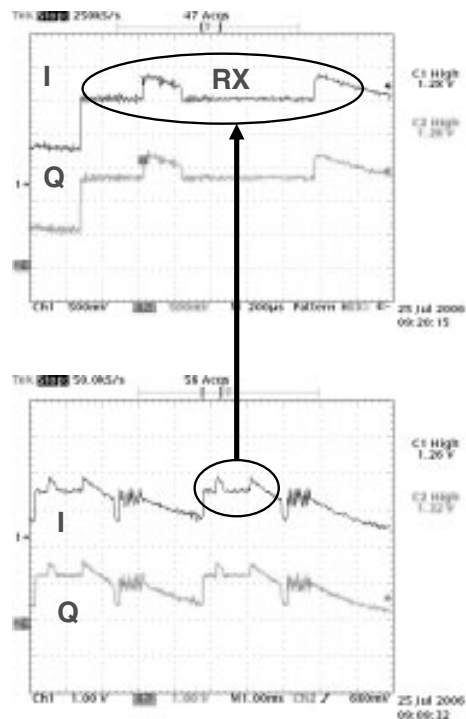
#### Checking Flow



#### Checking Points



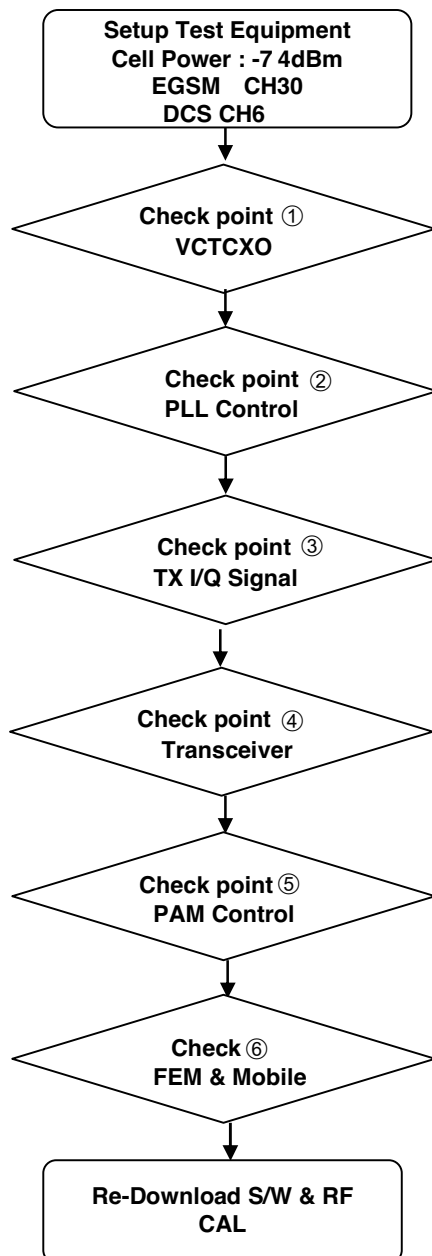
**Figure 15. RX I/Q**



**Figure 16. RX I/Q Waveform**

### 5.12.7 Trouble Shooting of Transmitter Part

#### Checking Flow



#### Checking Points

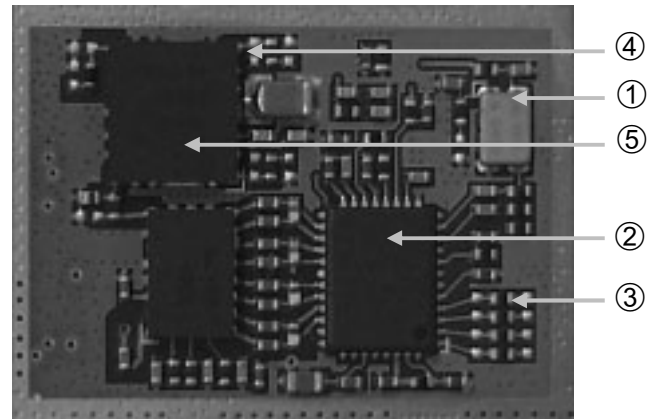


Figure 17. Main PCB Top



Figure 18. Main PCB Bottom

## **5. Trouble shooting**

---

### **5.12.8 Checking VTCXO Circuit**

**See RX Part “1. Checking VTCXO Circuit”**

### **5.12.9 Checking PLL Control Signal**

**See RX Part “2. Checking PLL Control Signal”**

5.12.10 Checking TX I/Q Signals

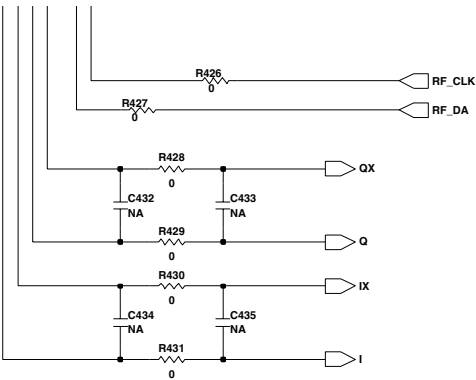
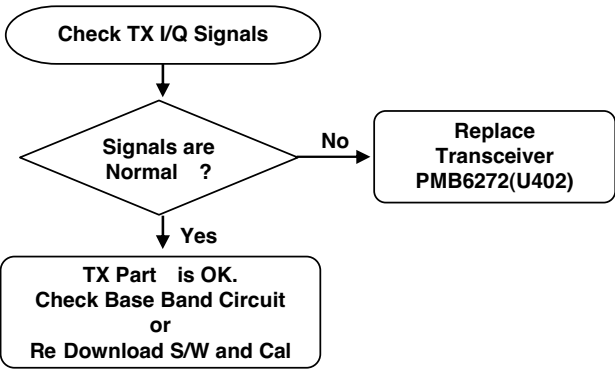


Figure 19. TX I/Q

Checking Flow



Checking Points

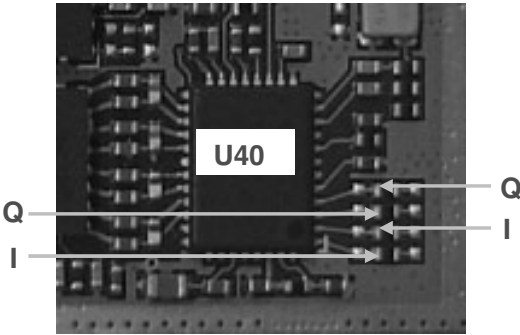


Figure 20. TX I/Q

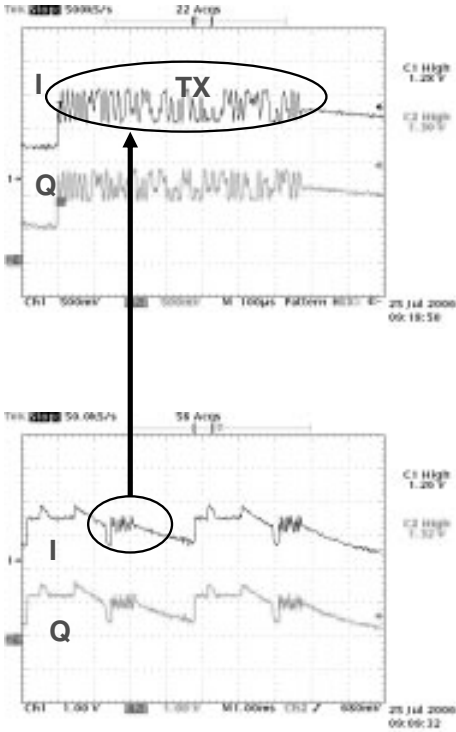


Figure 21. TX I/Q Waveform

## 5. Trouble shooting

### 5.12.11 Checking Transceiver Output Signals

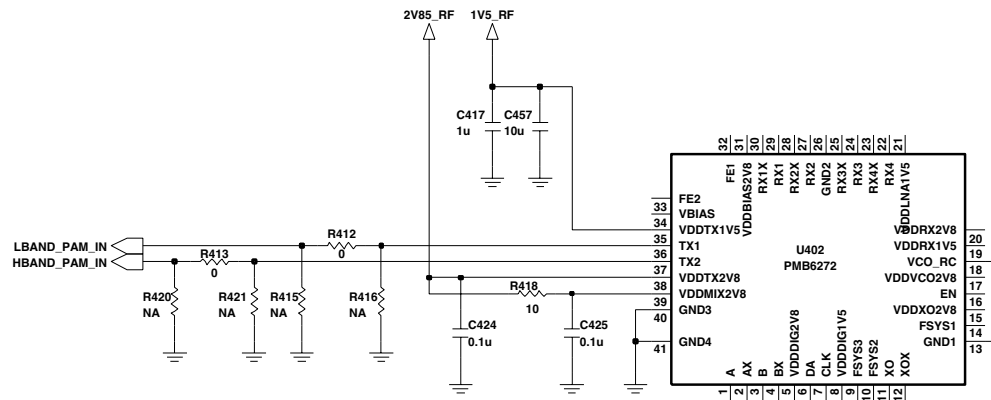


Figure 22. Transceiver Output Circuit

### Checking Points

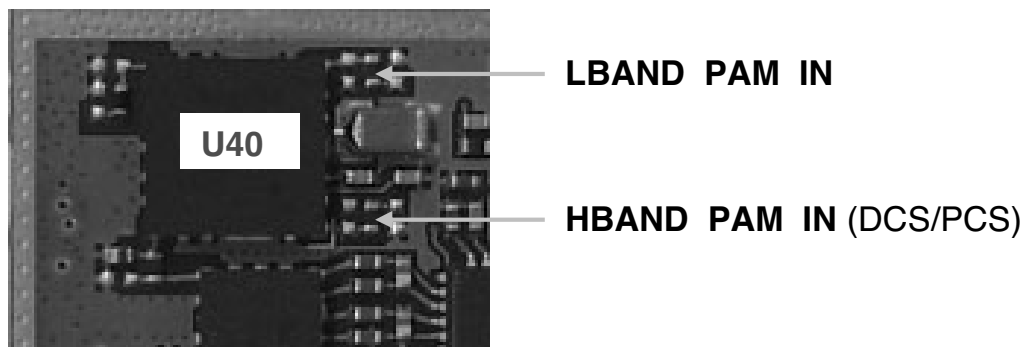
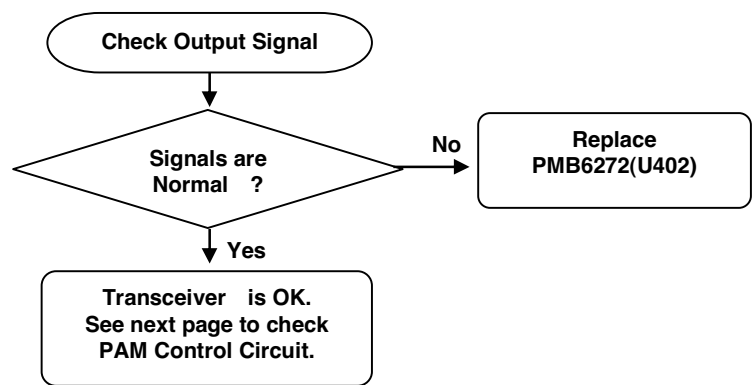


Figure 23. Transceiver Output

MODE	Transceiver Output
GSMK	Fixed
8PSK	Ramp Burst Control

Table 3. Transceiver Output Operation

Checking Flow



LBAND\_PAM\_IN (MODE: GMSK)

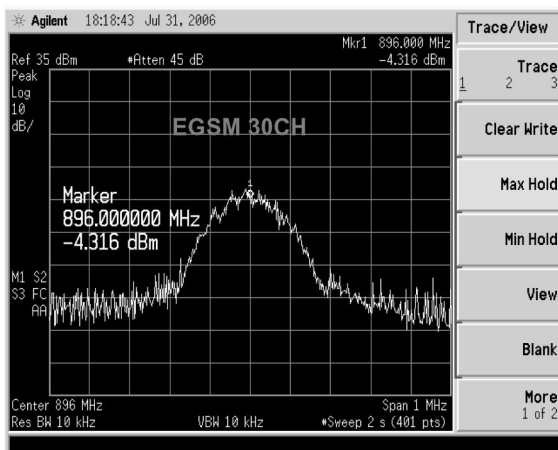


Figure 24. Transceiver Output (GMSK)

LBAND\_PAM\_IN (MODE: 8PSK)

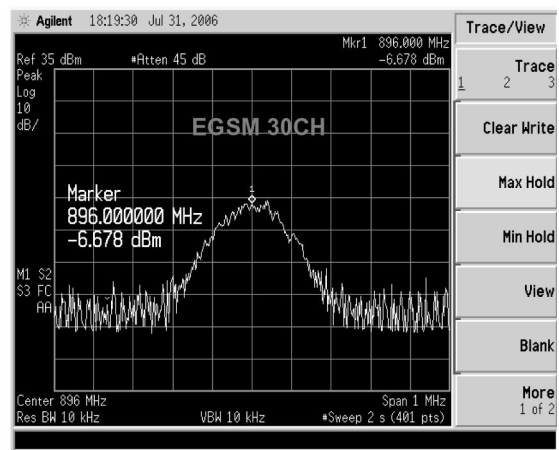


Figure 25. Transceiver Output (8PSK)

## 5. Trouble shooting

### 5.12.12 Checking PAM Control Signals

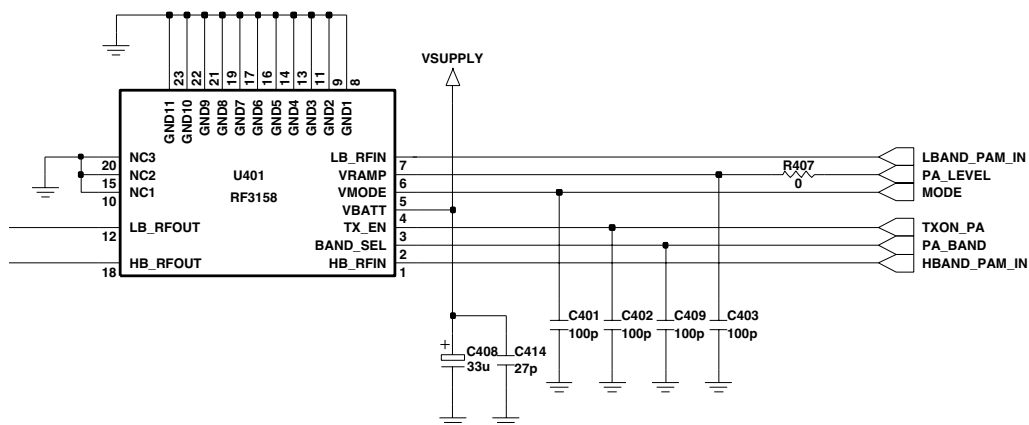


Figure 26. PAM Control Signals Circuit

### Checking Points

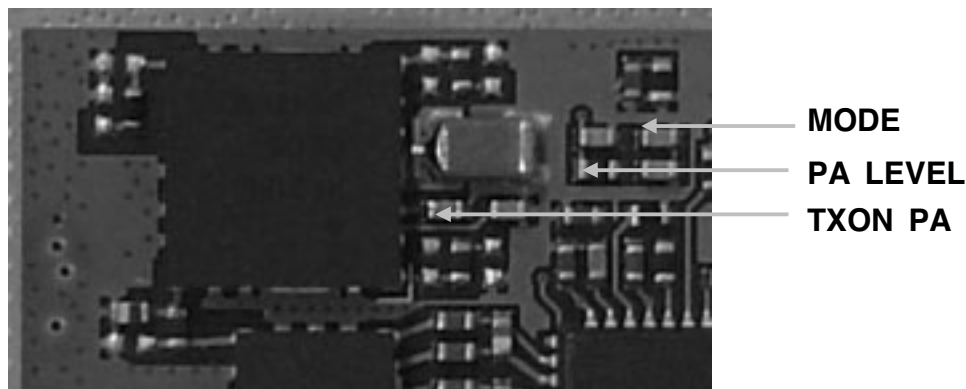


Figure 27. Transceiver Output

MODE	MODE	PA_LEVEL	TXON_PA
GMSK	LOW	Ramp Burst Control	HIGH
8PSK	HIGH	Control Amp bias	HIGH

Table 4. PAM Mode Operation

Checking Flow

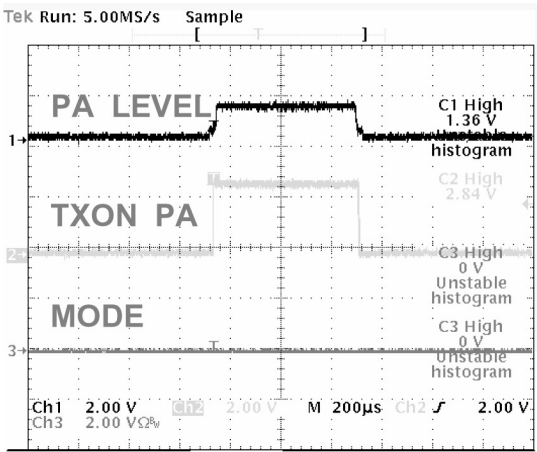
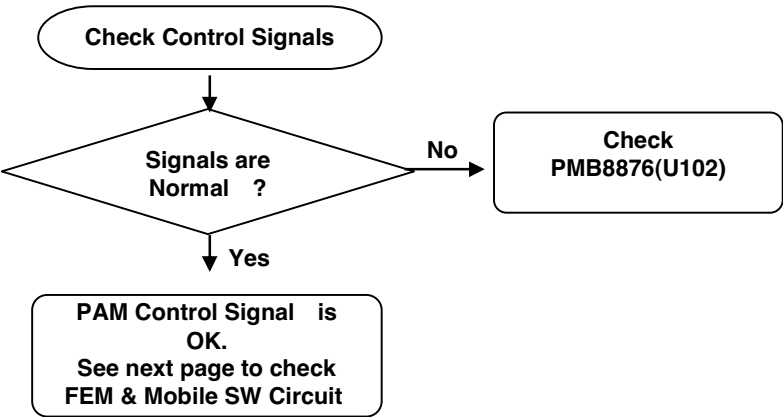


Figure 28. GSMK Control Signal

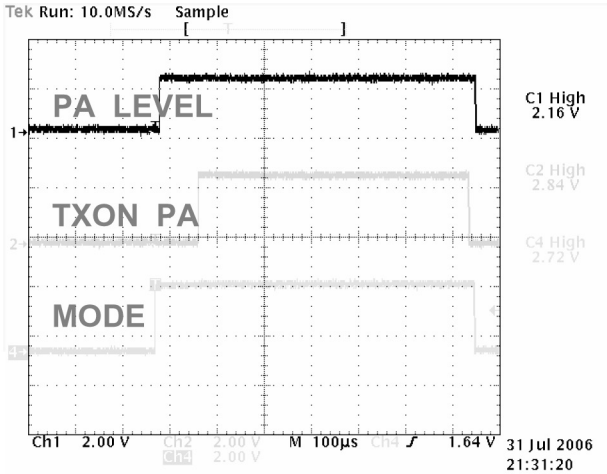


Figure 29. 8PSK Control Signal

5. Trouble shooting

5.12.13 Checking FEM & Mobile SW

Circuit Diagram

Mobile SW & FEM

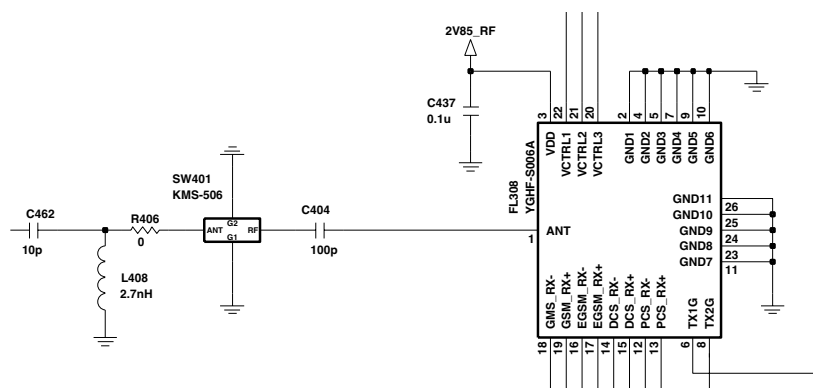


Figure 30. Mobile SW & FEM Circuit

Checking Points

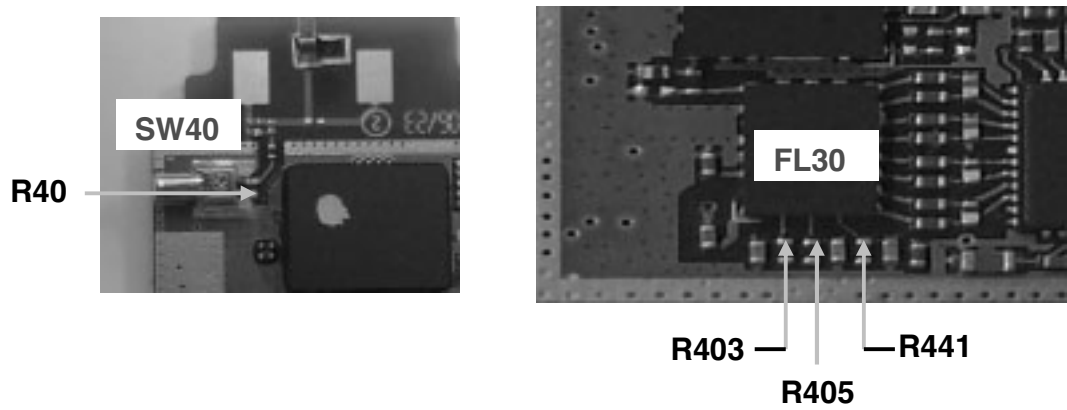


Figure 31 Mobile SW & FEM Input

RX Mode	EGSM	DCS	PCS
ANT_SW1	On	On	On
ANT_SW2	Off	On	On
ANT_SW3	Off	Off	Off

Table 5. FEM TX Control Logic

### Checking Flow

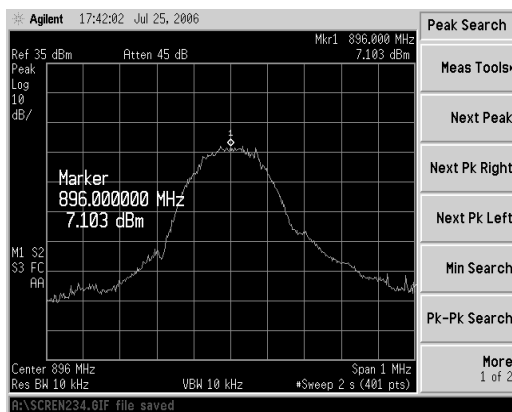
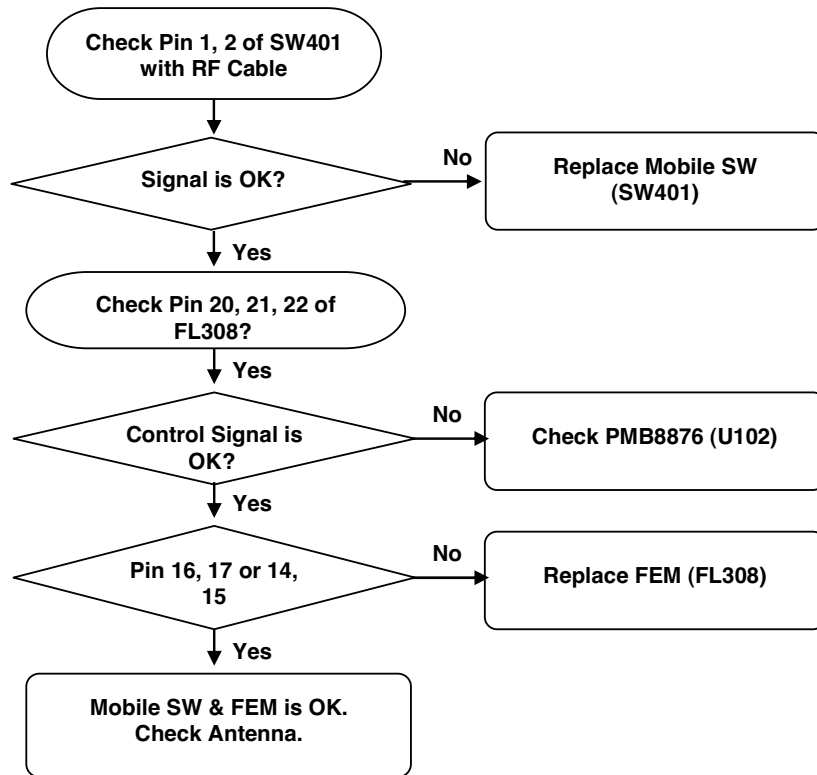


Figure 32 Mobile SW

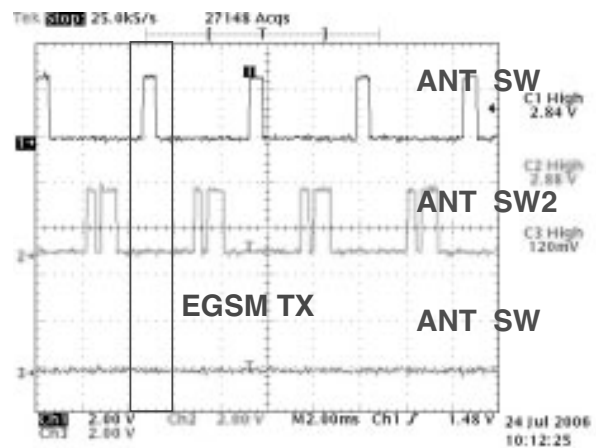


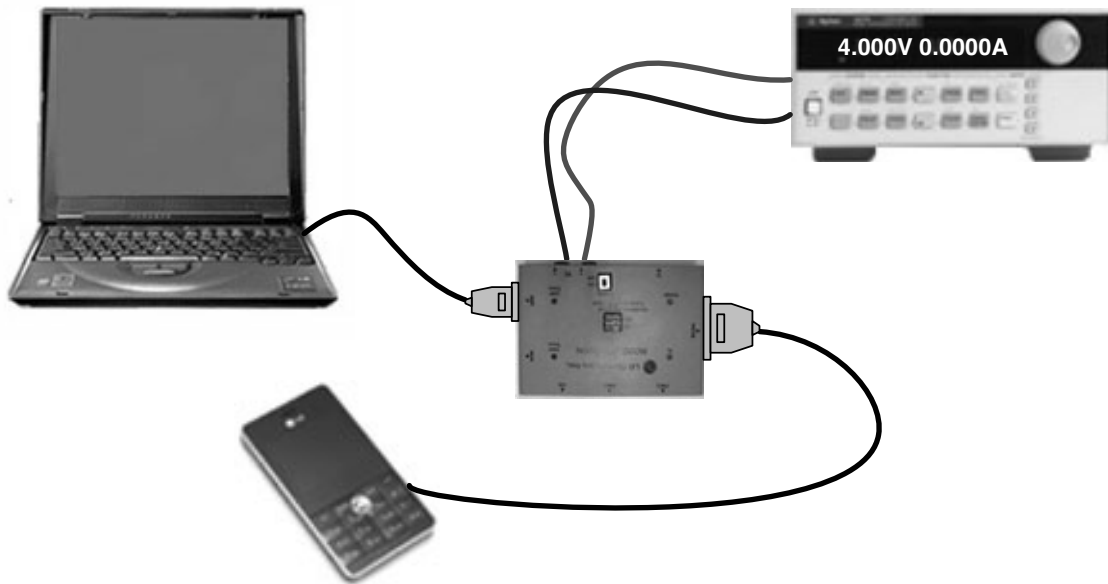
Figure 33 FEM Control Signals

## 6. Download & S/W upgrade

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## 6. Download & S/W upgrade

### 6.1 S/W download setup



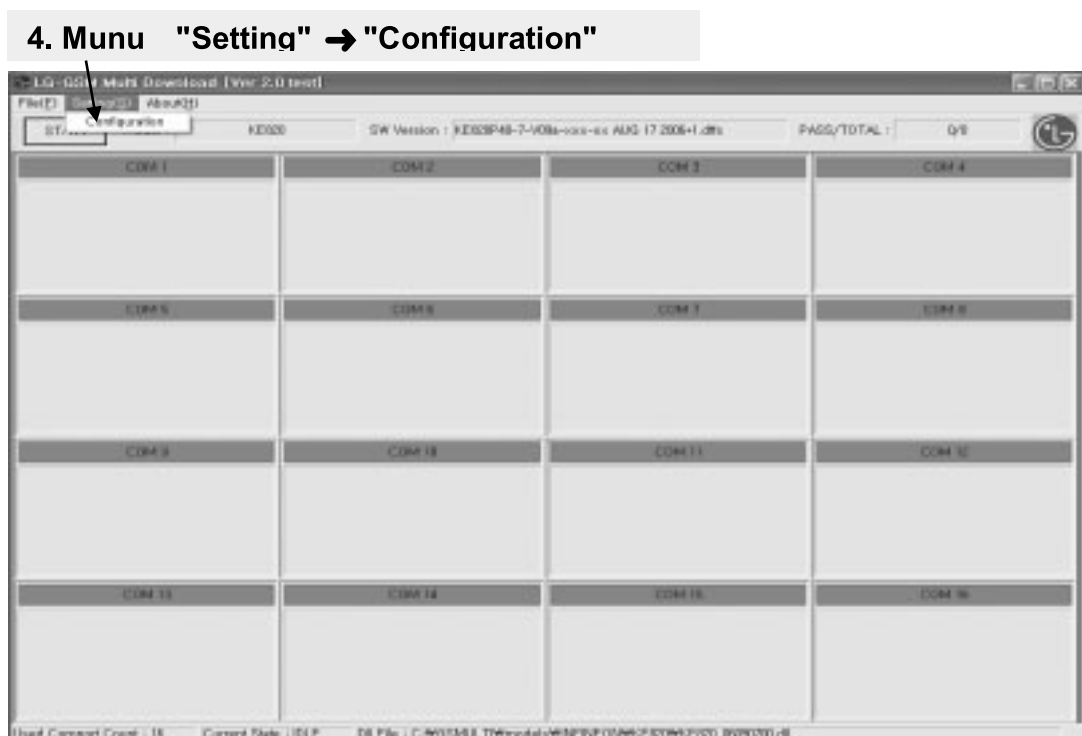
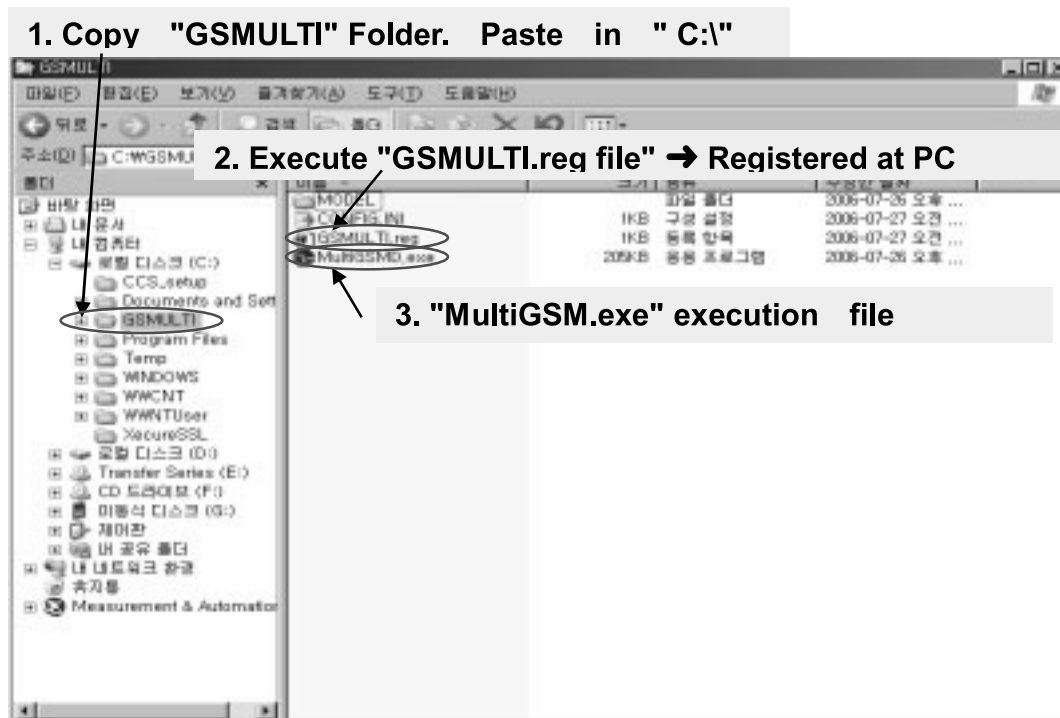
**Figure S/W download & upgrade setup**

#### **Preparation**

- Target terminal
- PIF-Union
- RS-232 Cable and PIF-UNION to Phone interface Cable
- Power Supply or Battery
- IBM compatible PC supporting RS-232 with Windows 98 or newer.

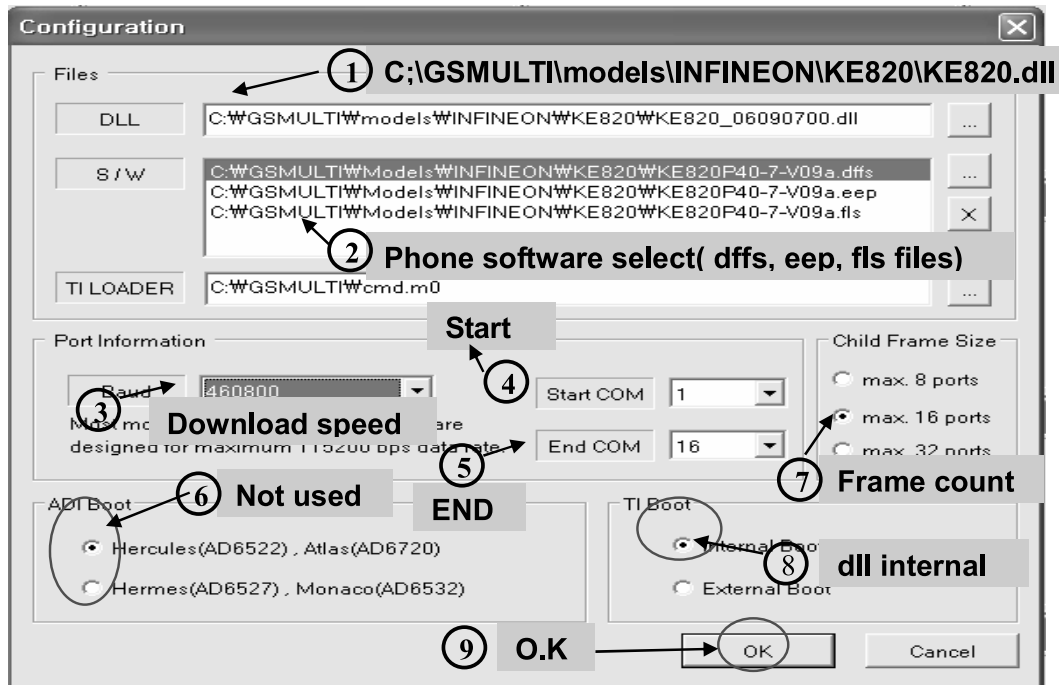
If you are going to use battery, the voltage of the battery should be over 3.7V for stable power supplying during S/W download.

## 6.2 Download program user guide



## 6. Download & S/W upgrade

### 5. Configuration : Select settings like below

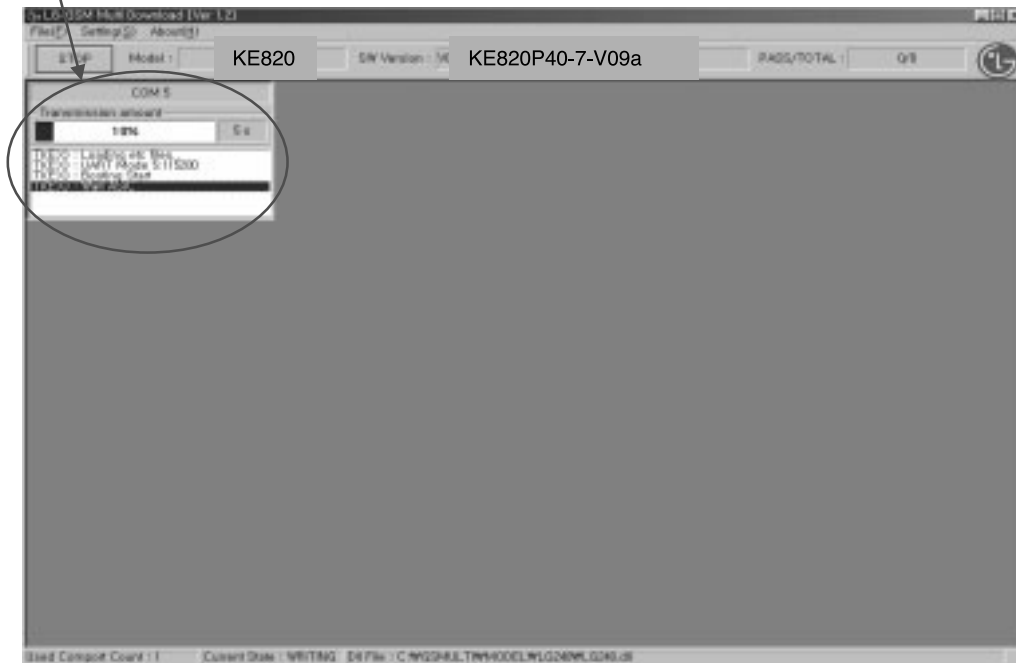


### 6. Press the "START" button



## 6. Download & S/W upgrade

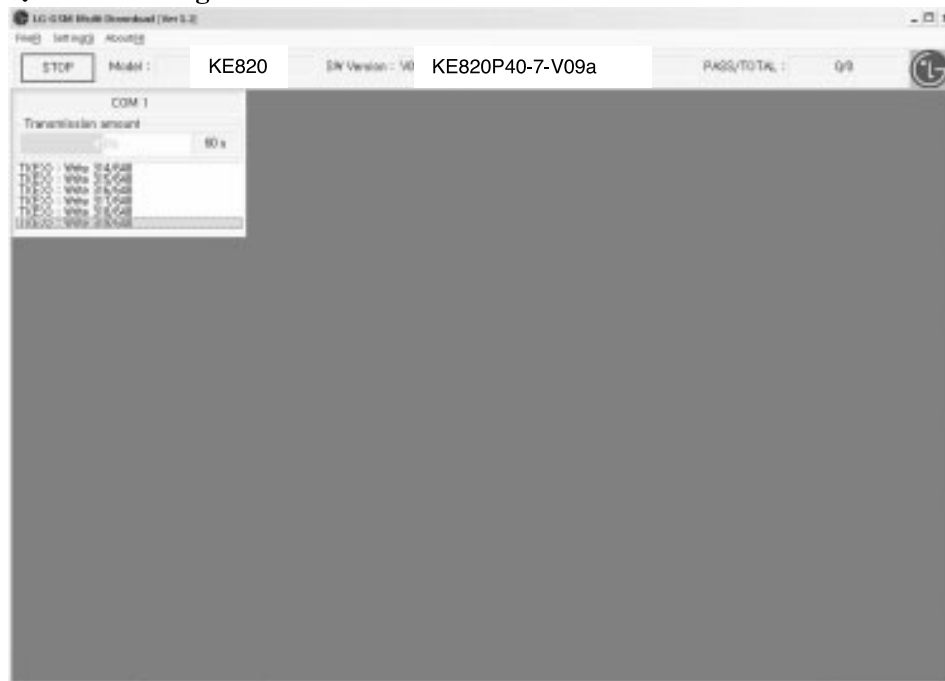
7. Stand-by condition → "Wait" is displayed → connect the Phone



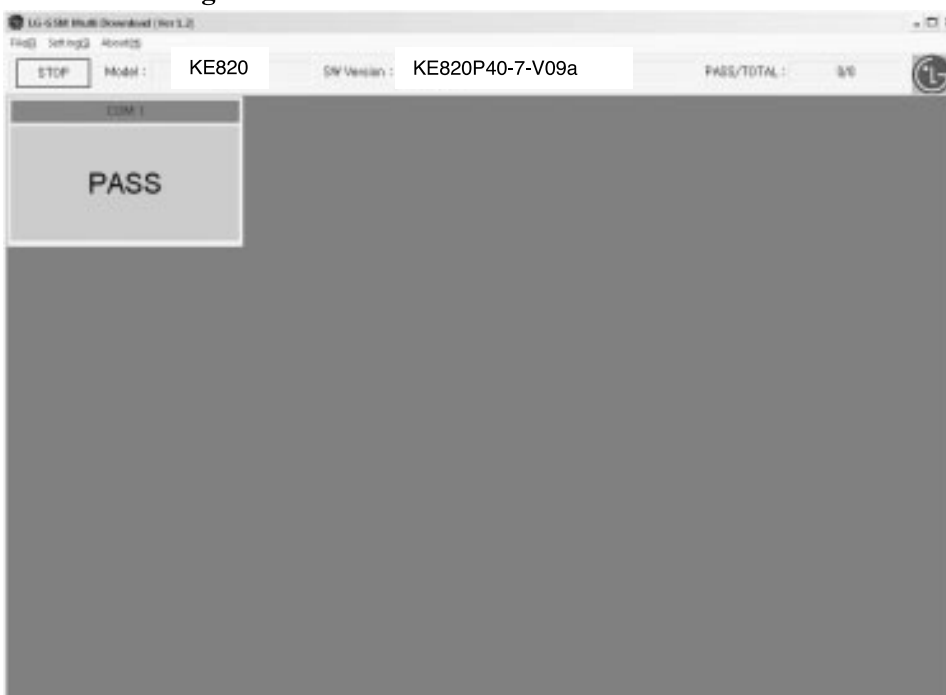
## 6. Download & S/W upgrade

---

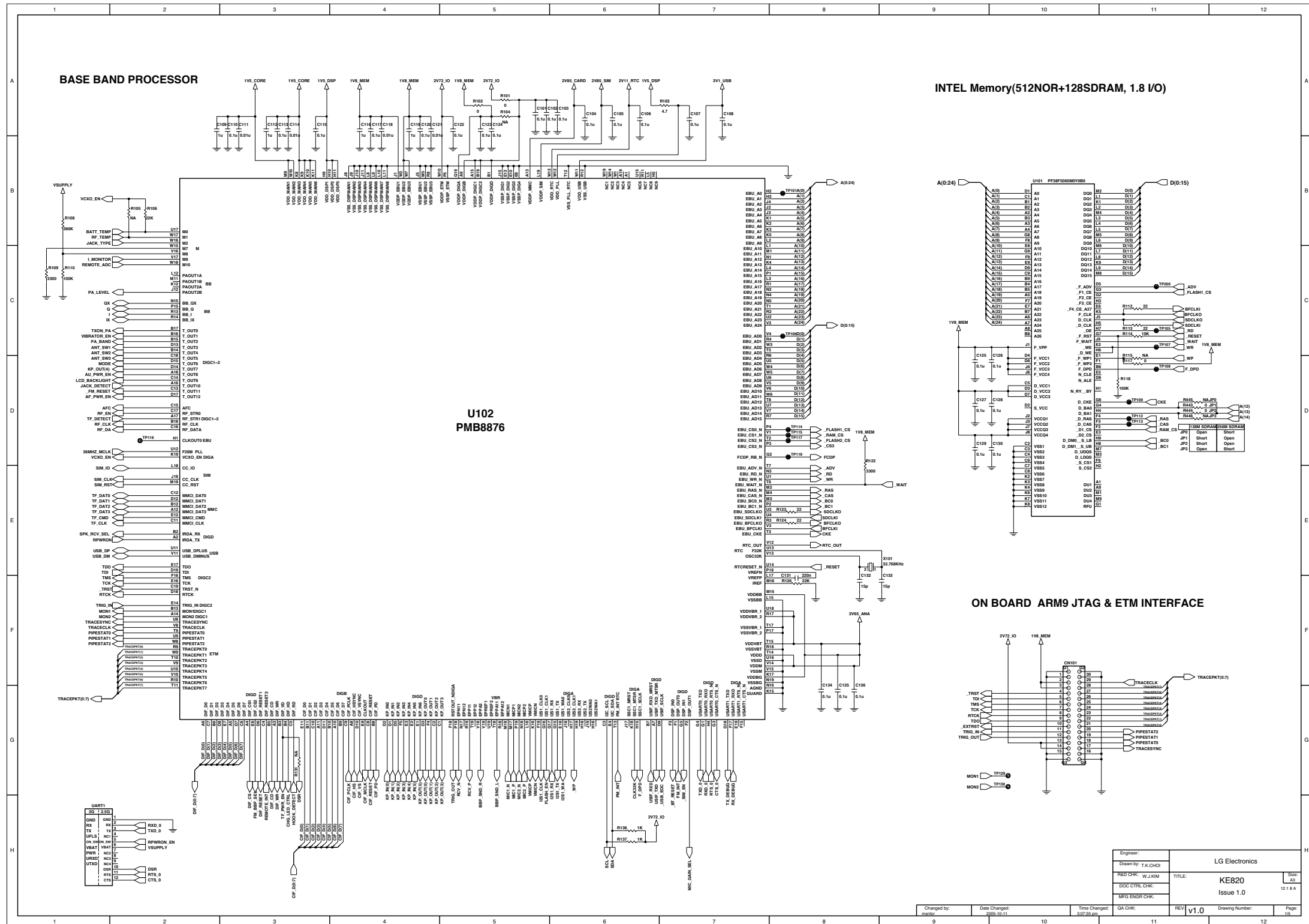
### ✳ Downloading : Start



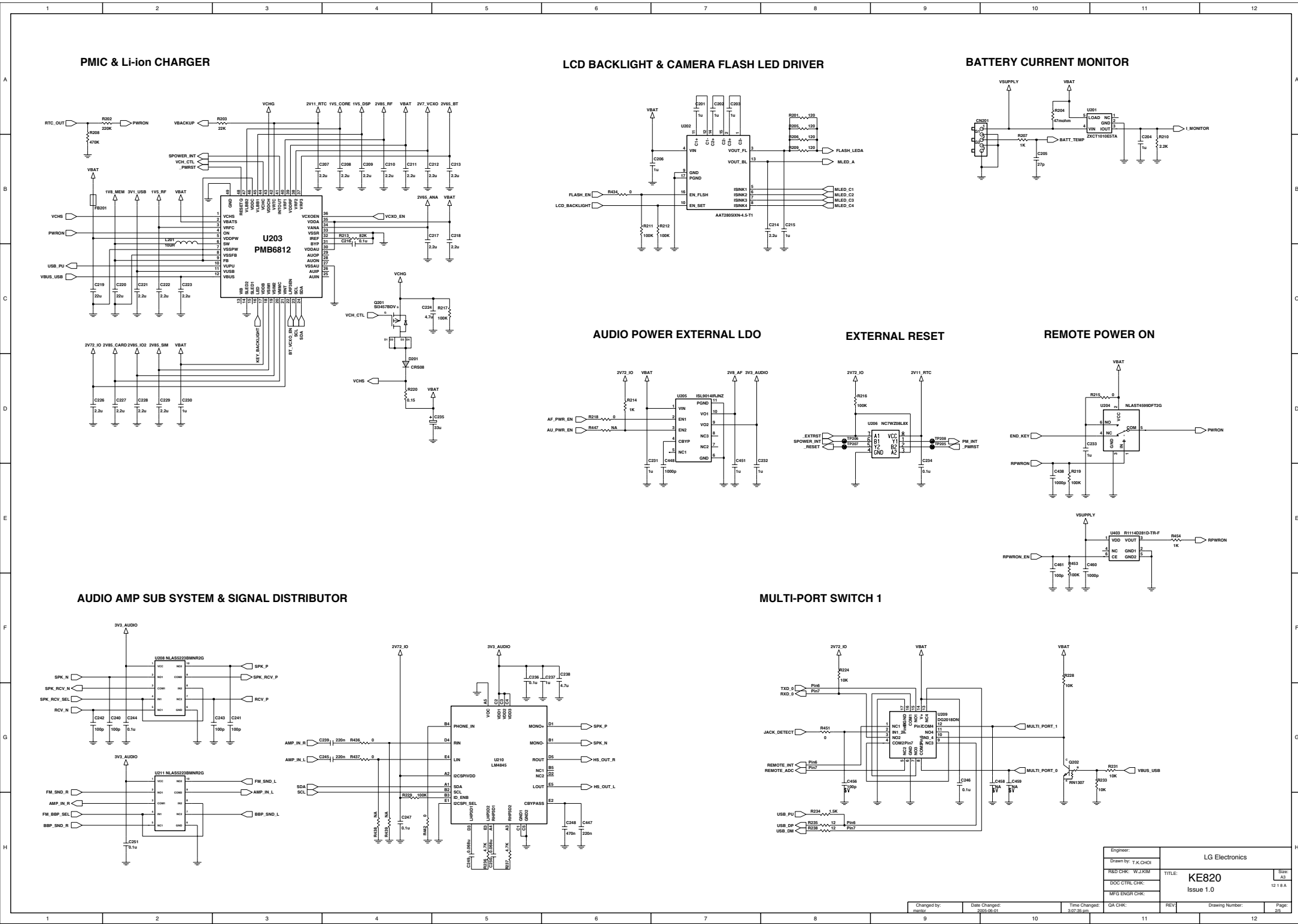
### ✳ Downloading : END



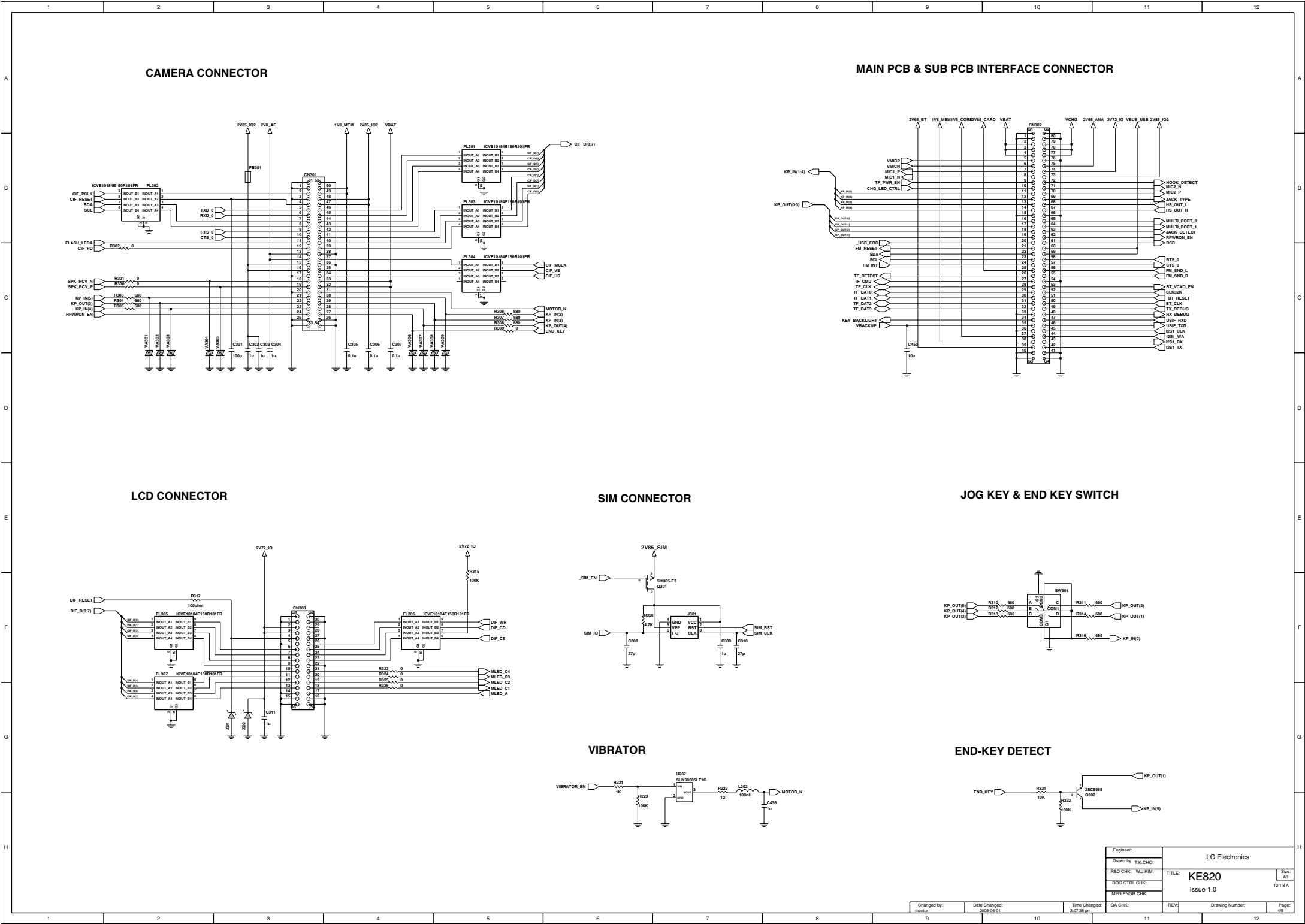
## 7. CIRCUIT DIAGRAM



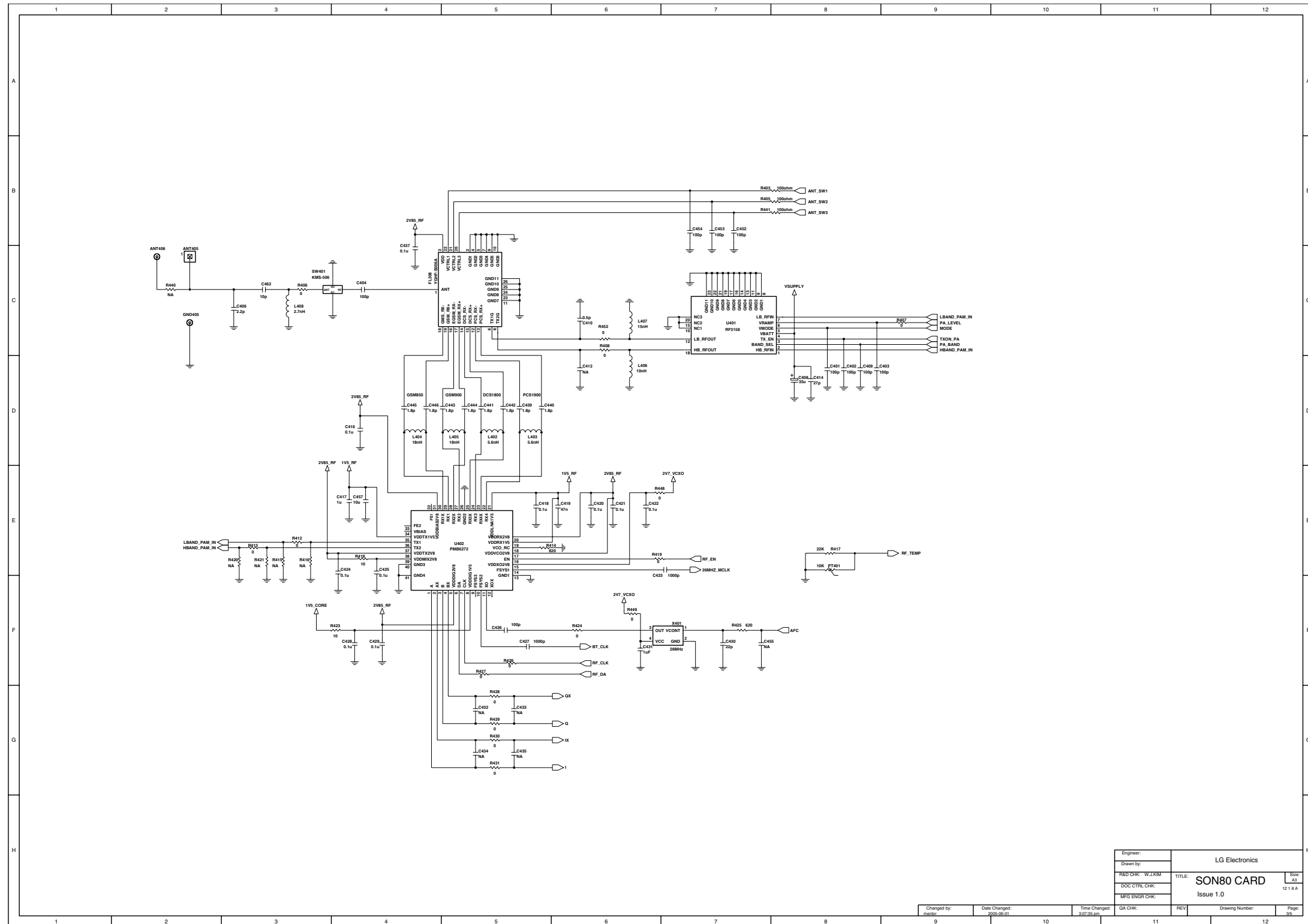
# 7. CIRCUIT DIAGRAM



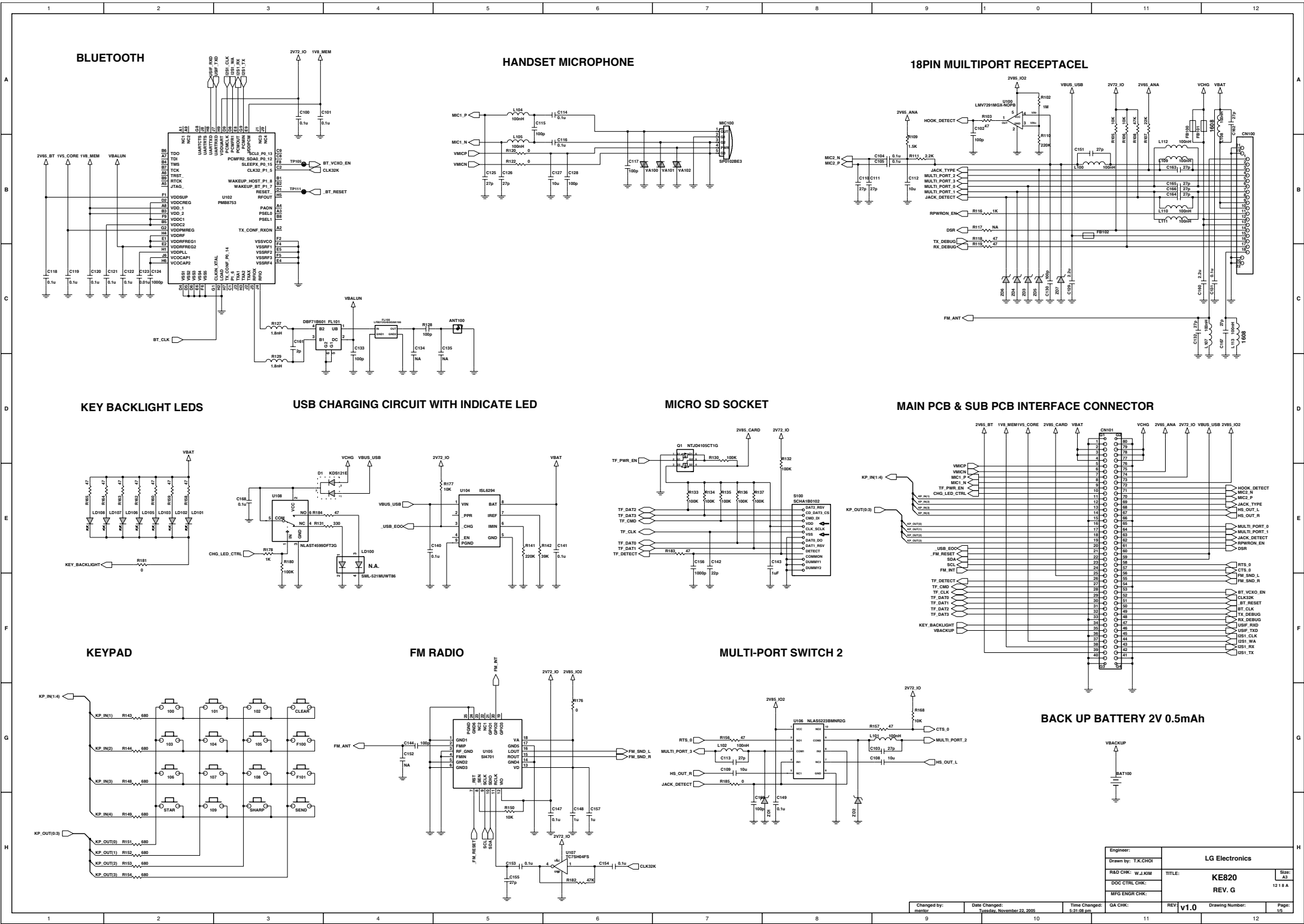
7. CIRCUIT DIAGRAM



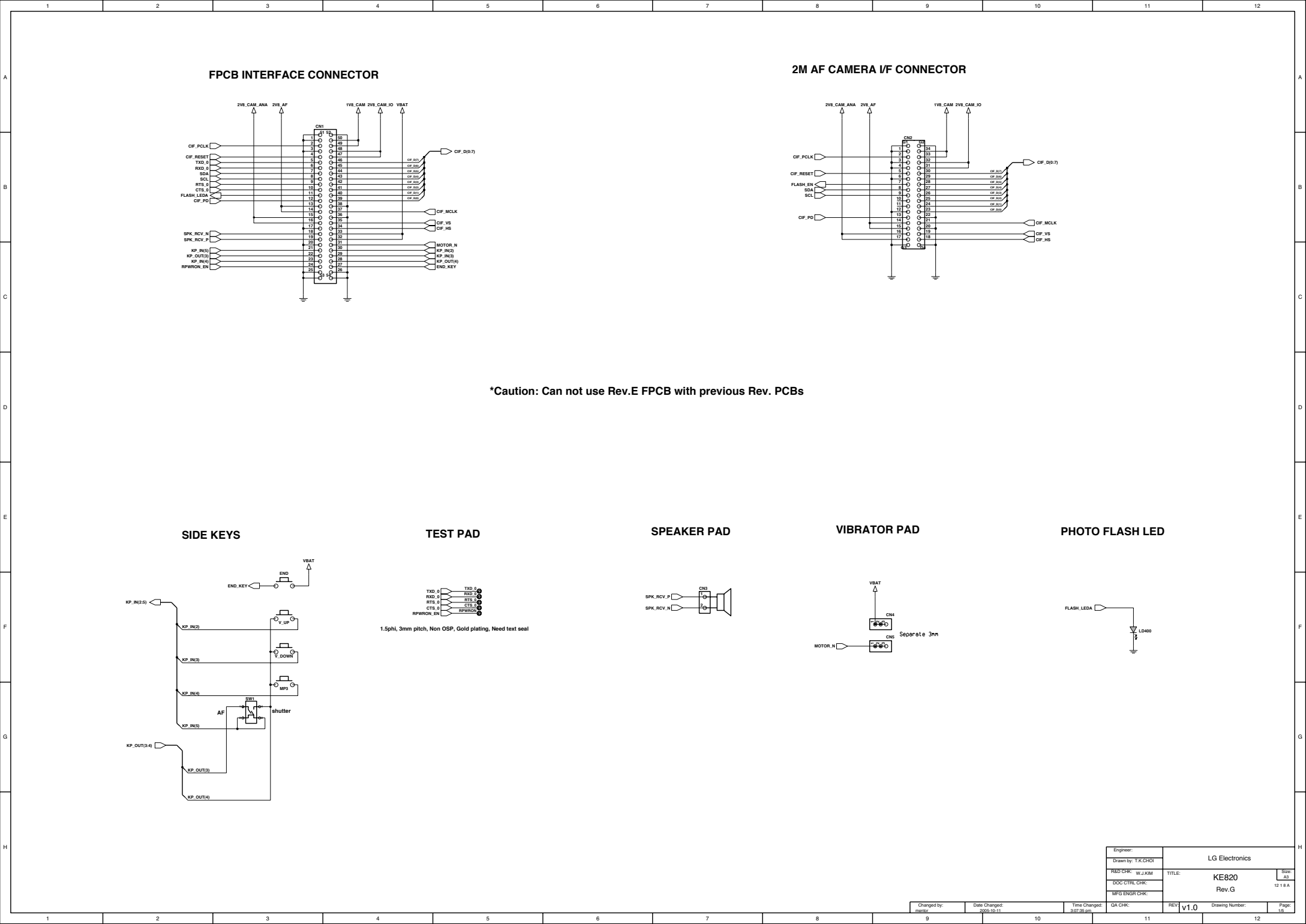
## 7. CIRCUIT DIAGRAM



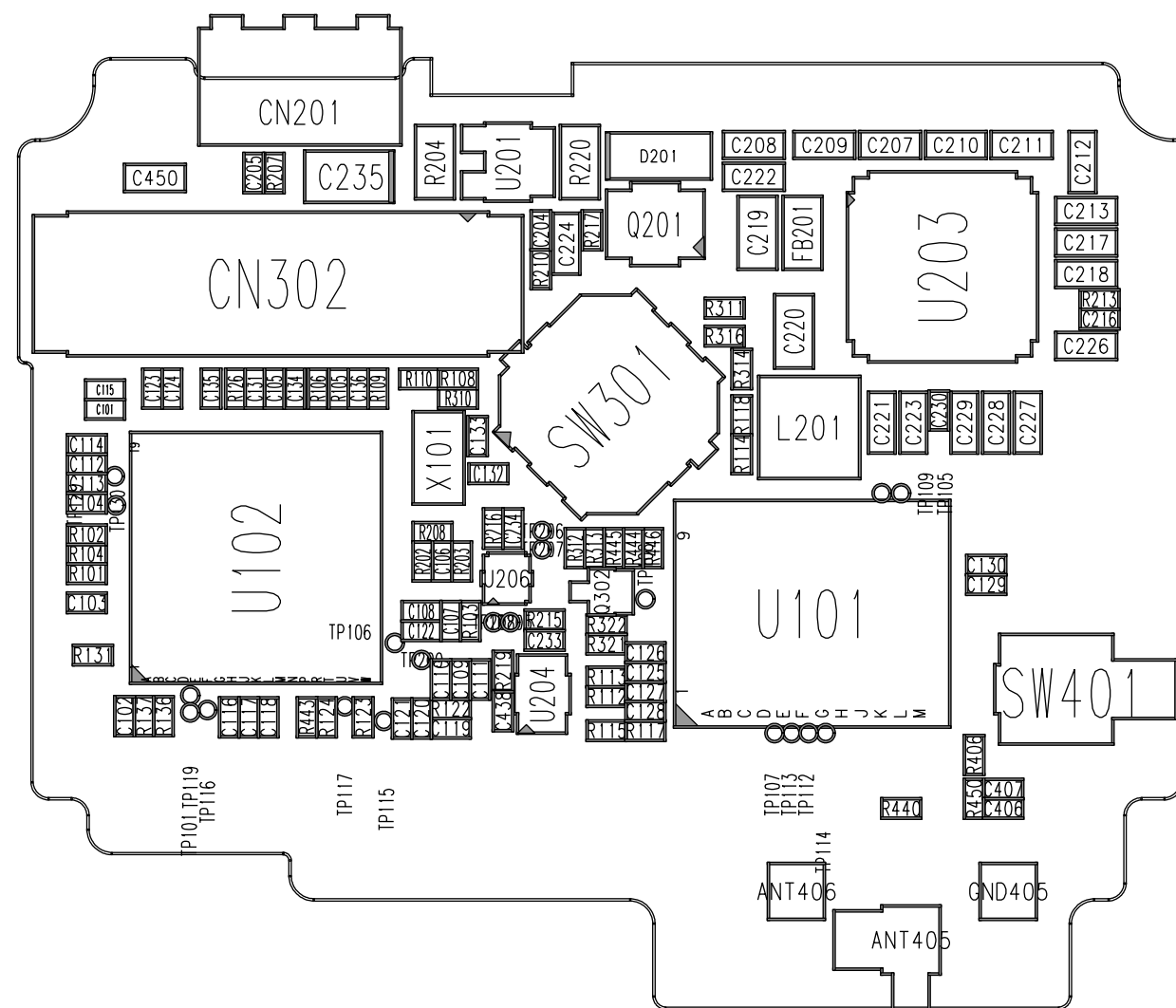
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

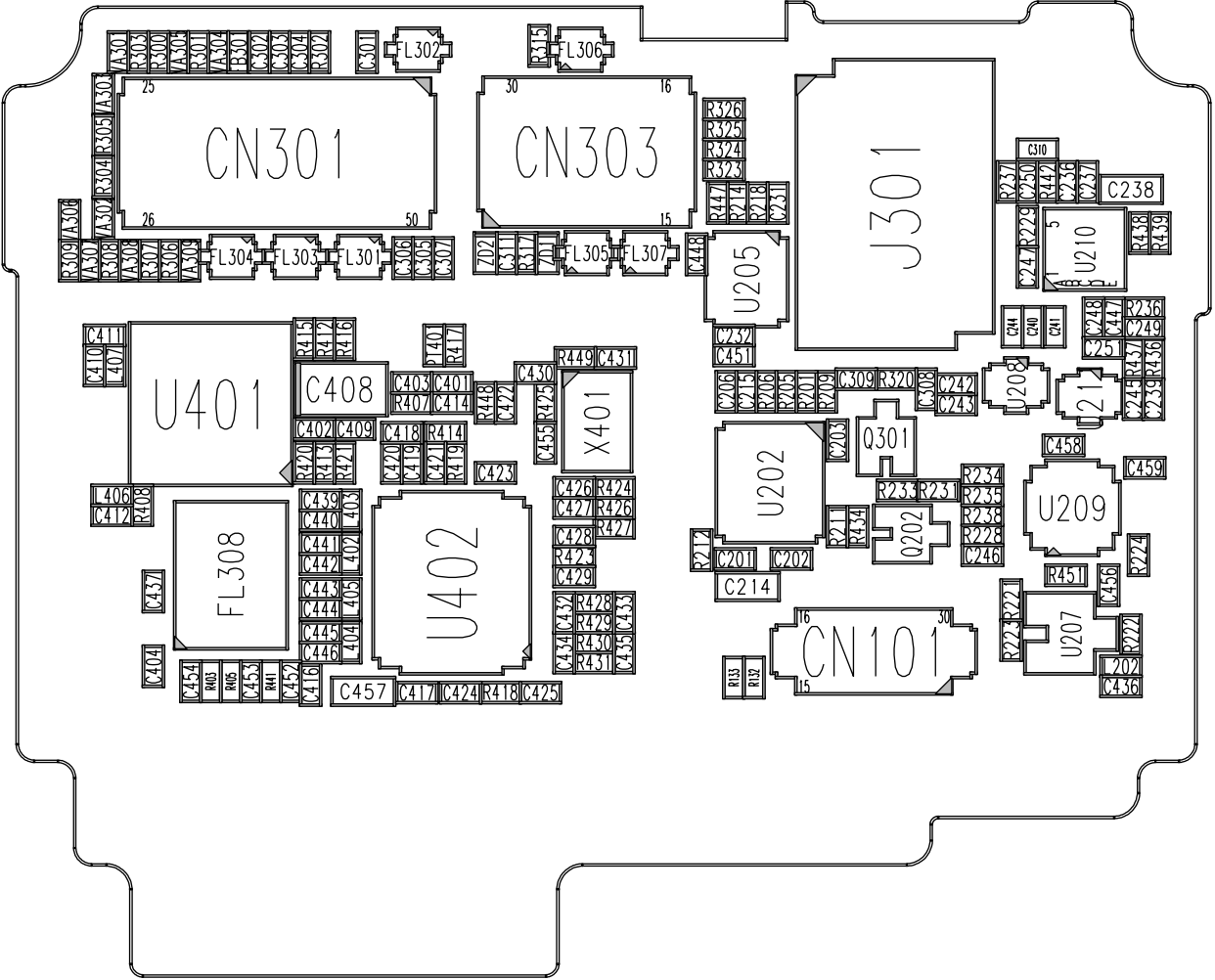


## 8. PCB LAYOUT



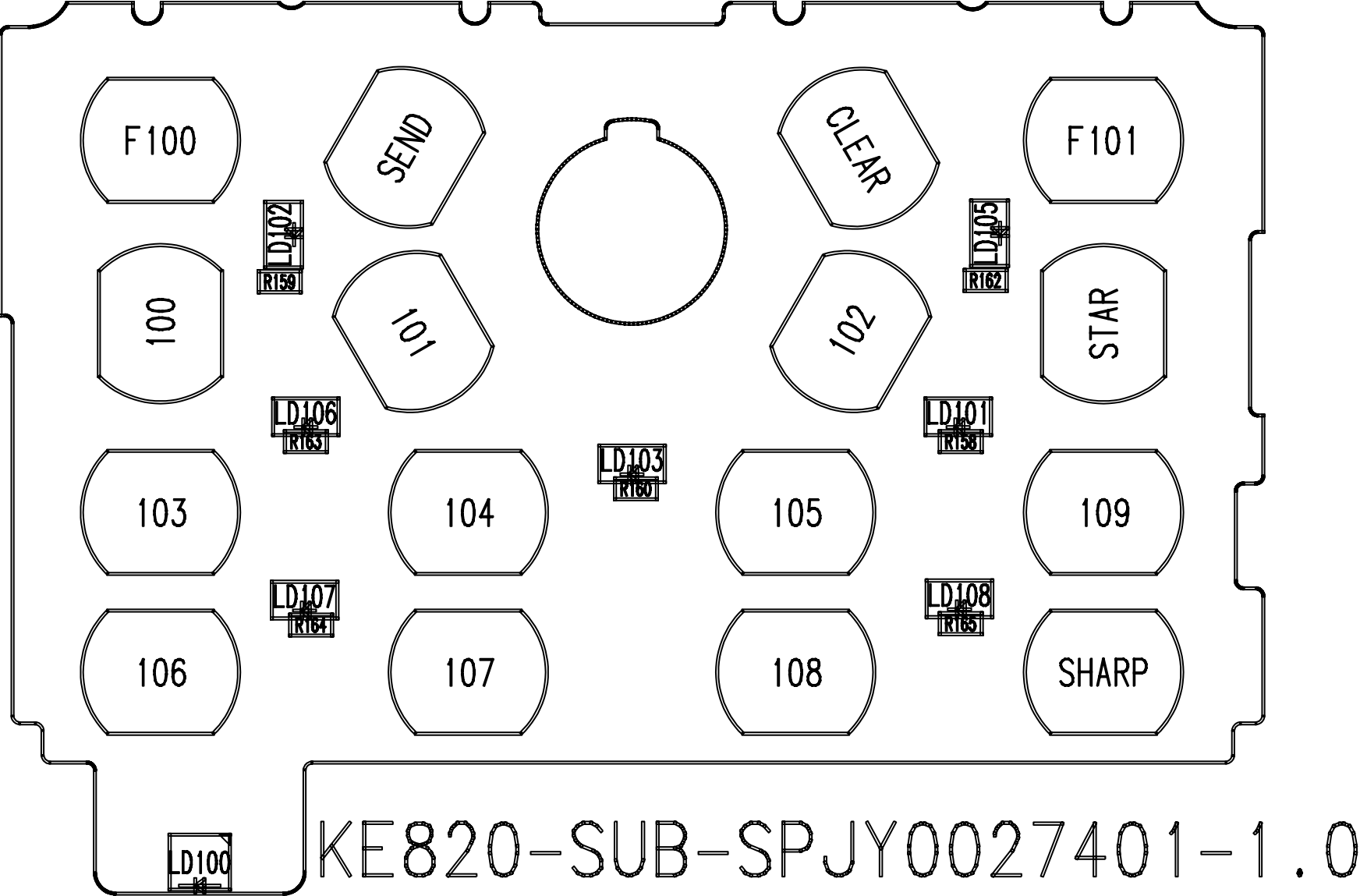
KE820-SPFY0127401-1.0-TOP

8. PCB LAYOUT

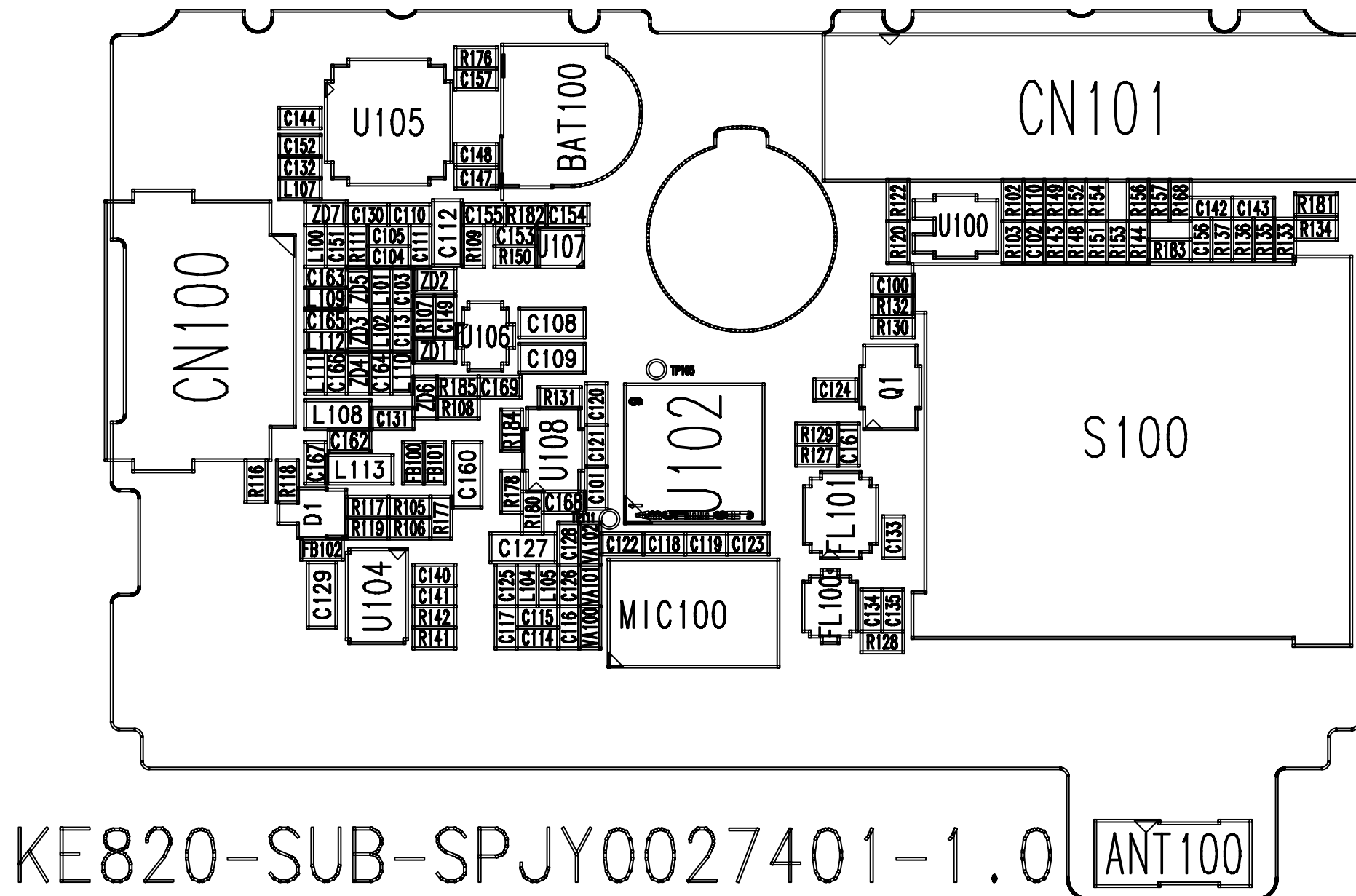


KE820-SPFY0127401-1.0-BTM

8. PCB LAYOUT

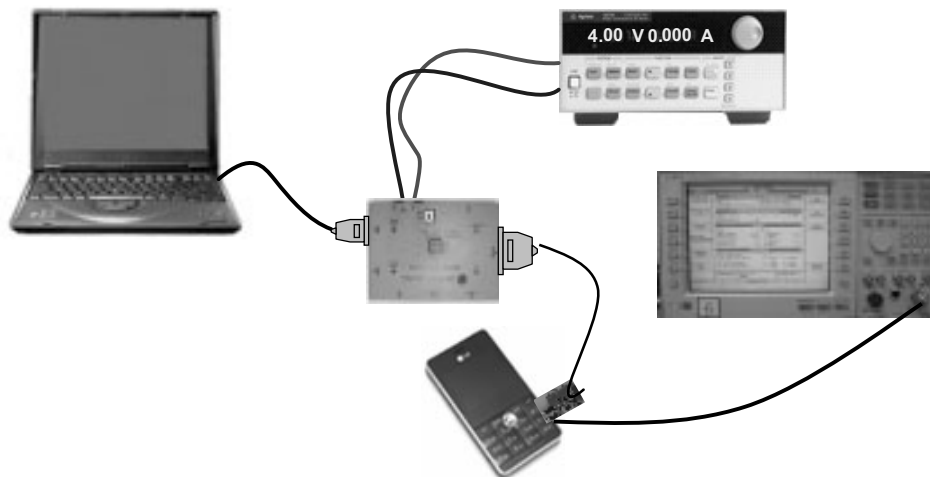


## 8. PCB LAYOUT



## 9. RF Calibration

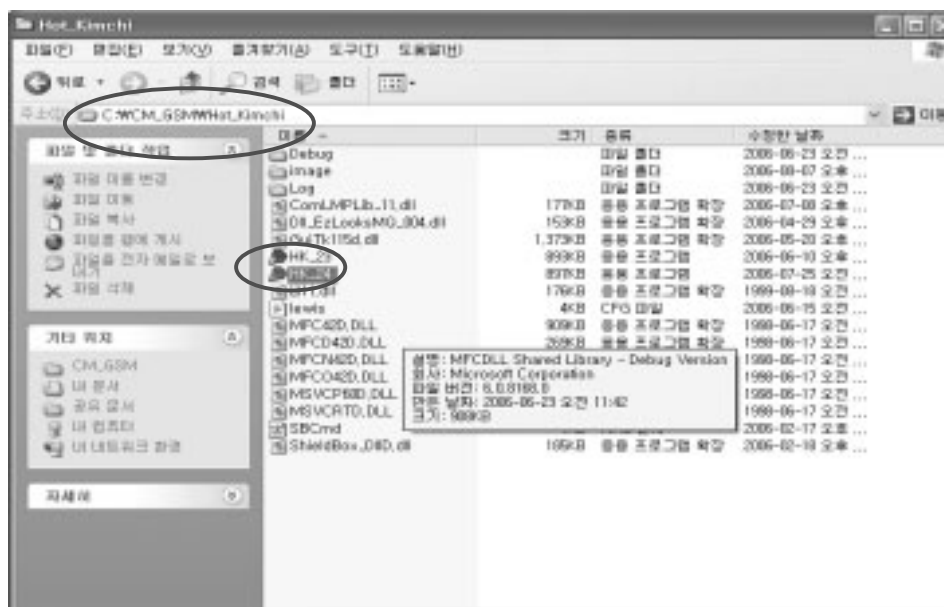
### 9.1 Test Equipment Setup



### 9.2 Calibration Steps

#### 9.2.1. Turn on the Phone.

#### 9.2.2. Execute “HK\_24.exe”



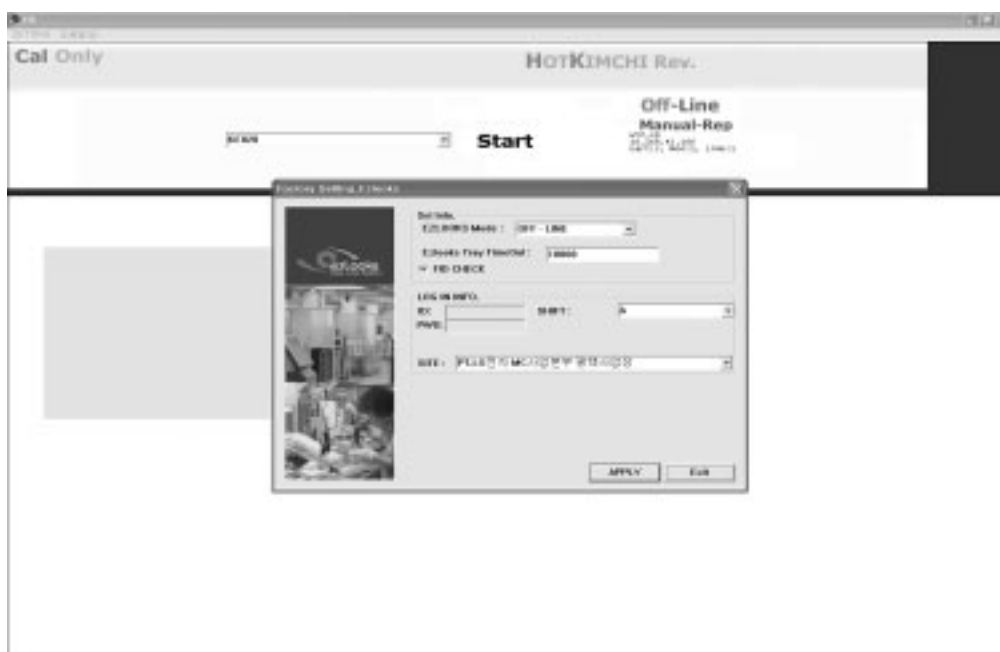
## 9. RF Calibration

---

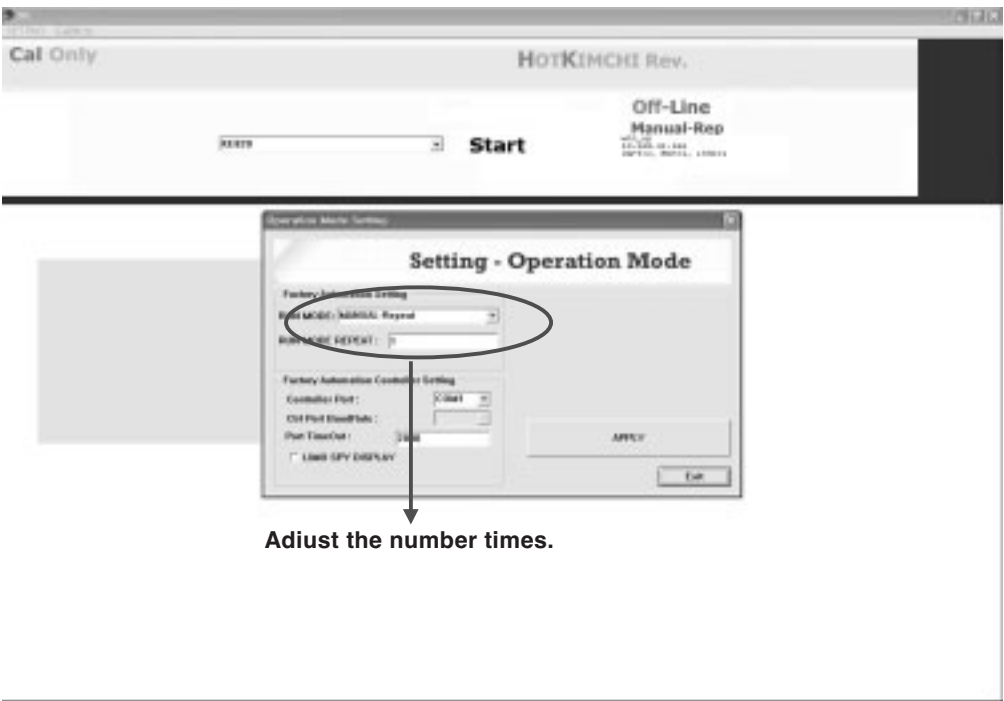
### 9.2.3. Click “SETTING” Menu



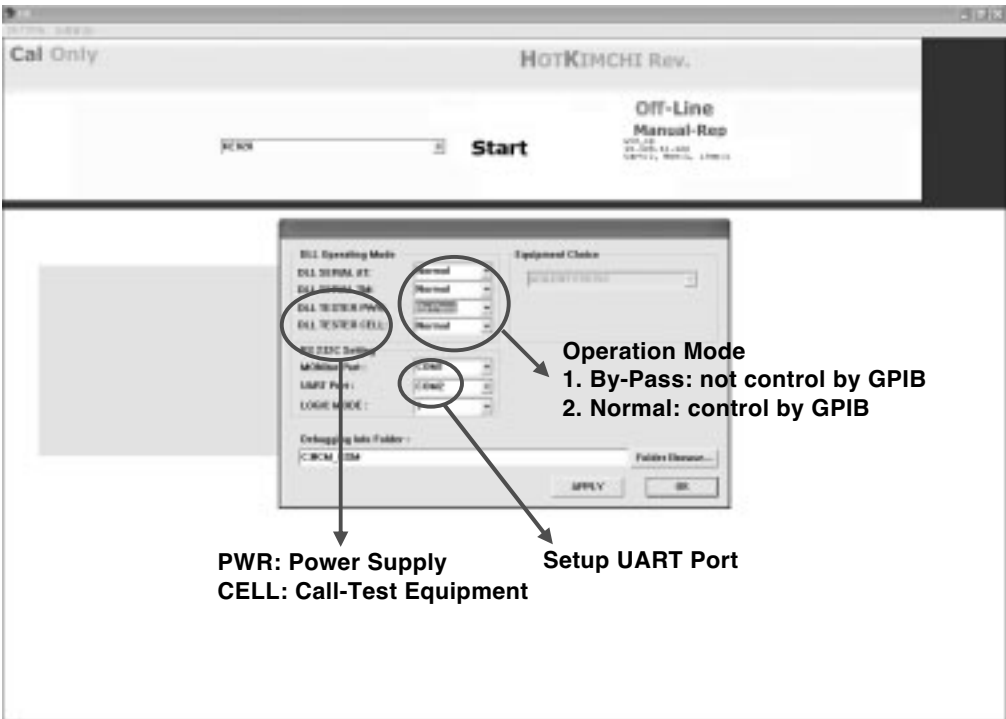
### 9.2.4. Setup “Ezlooks” menu such as the following figure



9.2.5. Setup “Line System” menu such as the following figure



9.2.6. Setup Logic operation such as the following figure.



## 9. RF Calibration

---

9.2.7. Select “MODEL”.

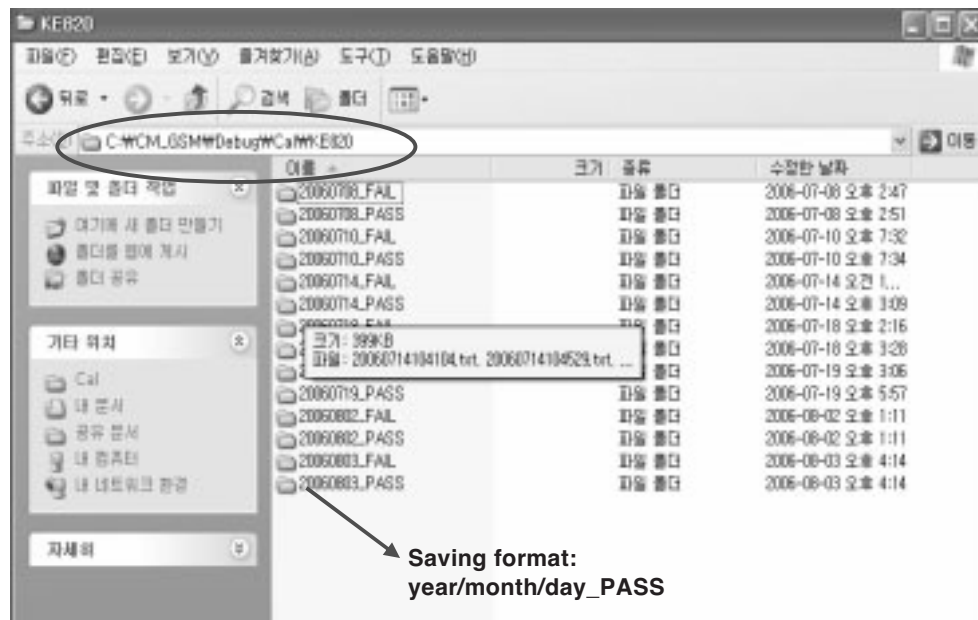
9.2.8. Click “START” for RF calibration



9.2.9. RF Calibration finishes.



9.2.10. Calibration data will be saved to the following folder.

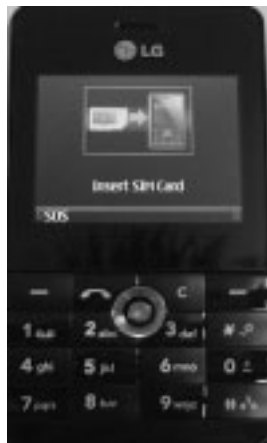


## 9. RF Calibration

---

### Notices:

1. The state of Phone is “ test mode “ during the CALIBRATION.
2. Calibration program automatically changes either “normal mode” or “ptest mode”.
3. RF Calibration steps as follow:  
TX Channel compensation: EGSM->DCS->PCS->EDGE EGSM->EDGE DCS->EDGE PCS  
RX Channel compensation: EGSM->DCS->PCS
4. Phone Operation Mode



< Normal Mode >



< ptest Mode>

## 10. ENGINEERING MODE

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset. The key sequence for switching the engineering mode on is "2945##"Select.

Pressing END will switch back to non-engineering mode operation. Use Up and Down key to select a menu and press 'select' key to progress the test. Pressing 'back key will switch back to the original test menu.

### [1] BB TEST

#### [1-1]Back Light

- [1-1-1] LCD Back Light Always On Enable
- [1-1-2] LCD Back Light Always On Disable

#### [1-2]LCD

- [1-2-1] LCD Color

#### [1-3]Camera

- [1-3-1] Camera Main Preview
- [1-3-2] Flash On
- [1-3-3] Flash Off

#### [1-4]Battery Info

- [1-4-1] Battery Info

#### [1-5]Vibrator

- [1-5-1] Vibrator On
- [1-5-2] Vibrator Off

#### [1-6]DAI

- [1-6-1] Close

#### [1-7]SD CARD

- [1-7-1] Close

#### [1-8]Connection

- [1-8-1] Bluetooth
- [1-8-2] Irda

#### [1-9]Audio

- [1-9-1] Close

#### [1-0]FM Radio

- [1-0-1] FM Radio Turn On
- [1-0-2] FM Radio Turn Off
- [1-0-3] FM Radio Seek Up
- [1-0-4] FM Radio Seek Down

#### [1-\*]Bluetooth Test

- [1-\*-1] Enter Test Mode
  - [1-\*-1-1] Audio Test
  - [1-\*-1-2] RF Test
- [1-\*-2] On Off Test

- [1-\*-2-1] Bluetooth On

- [1-\*-2-2] Bluetooth Off

- [1-\*-3] Headset Test

- [1-\*-4] Communication Mode

- [1-\*-4-1] AT=USB0, UART0 Trace=UART1

- [1-\*-4-2] AT=USB0, BT Trace=UART0

- [1-\*-4-3] AT=USB0, UART0, BT Trace=NULL

- [1-\*-5] Xhtml Compose Print

- [1-\*-6] Xhtml Print Test

- [1-\*-6-1] Images

- [1-\*-6-2] HtmlTestPrint.xhtml

### [2] Model Version

#### [2-1] Version

### [3] Eng Mode

#### [3-1] Cell Environ.

#### [3-2] PS Layer Info

- [3-2-1] Mobility
- [3-2-2] RadioRes
- [3-2-3] Gprs

#### [3-3] Layer Info

- [3-3-1] Close

#### [3-4] Reset Information

- [3-4-1] Excpt

#### [3-5] Memory Configuration

#### [3-6] MemGenConf

#### [3-7] MemAllUse

#### [3-8] MemDetUse

#### [3-9] MemDump

#### [3-0] Change Frequency Band

- [3-0-1] Close

### [4] Call Timer

### [5] Factory Reset

### [6] MF TEST

#### [6-1] All Auto Test

#### [6-2] Backlight

- [6-2-1] Backlight On
- [6-2-2] Backlight Off

#### [6-3] Audio

- [6-3-1] Audio Test

#### [6-4] Vibrator

- [6-4-1] Vibrator On
- [6-4-2] Vibrator Off

#### [6-5] LCD

- [6-5-1] Close
- [6-5-2] Auto LCD

#### [6-6] Key Pad

#### [6-7] Mic Speaker

#### [6-8] Camera

- [6-8-1] Camera Main Preview

#### [6-9] FM Radio

- [6-9-1] FM Radio Test

#### [6-0] Connection

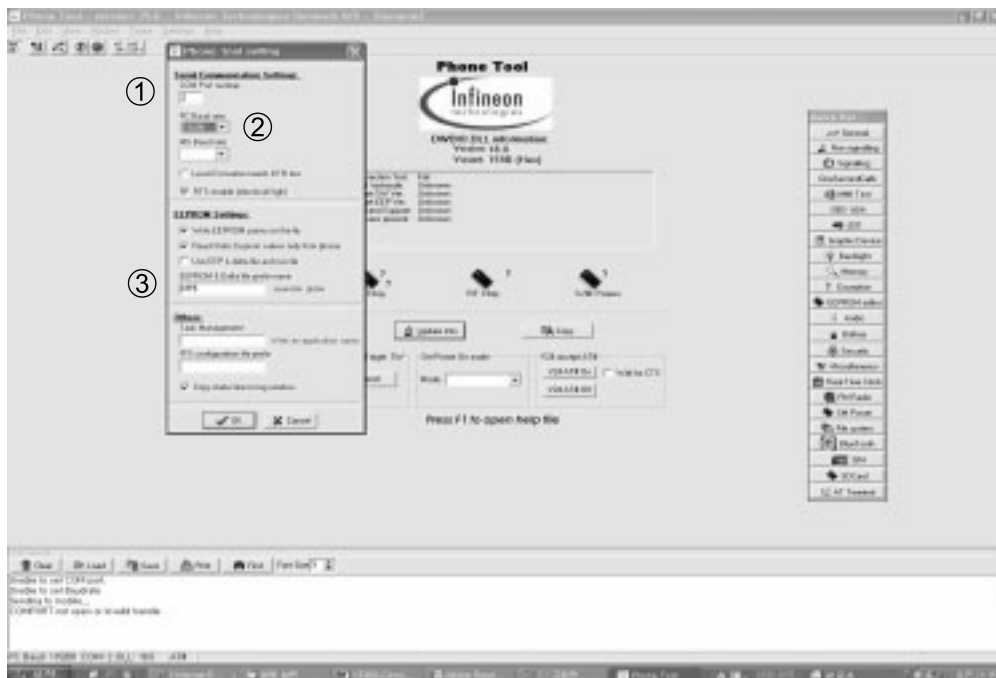
- [6-0-1] Blue Tooth
- [6-0-2] Irda

## 11. STANDALONE TEST

# 11. STANDALONE TEST

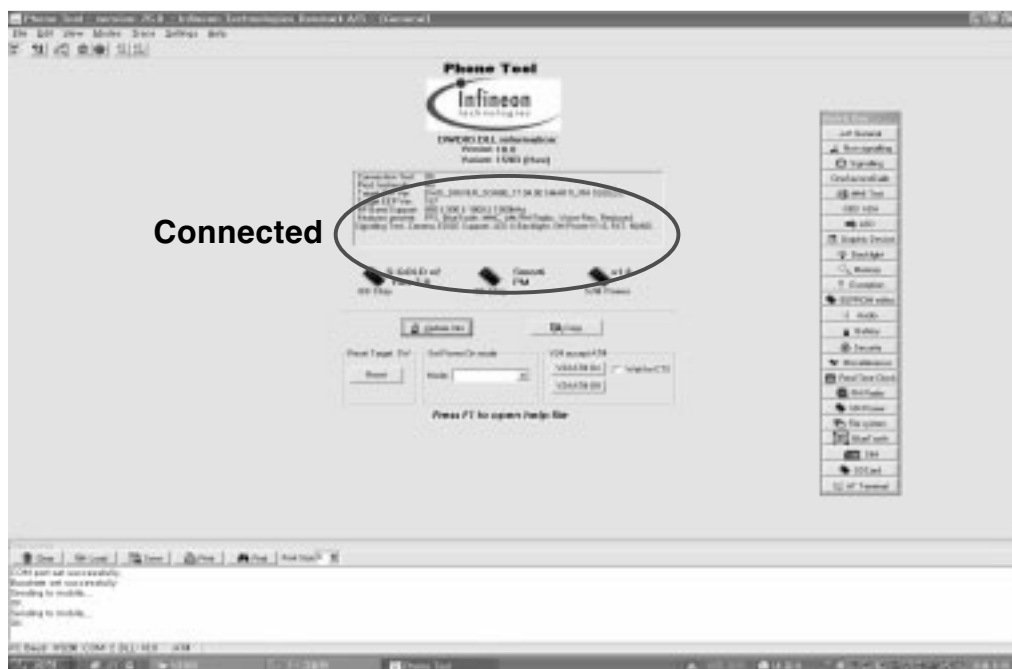
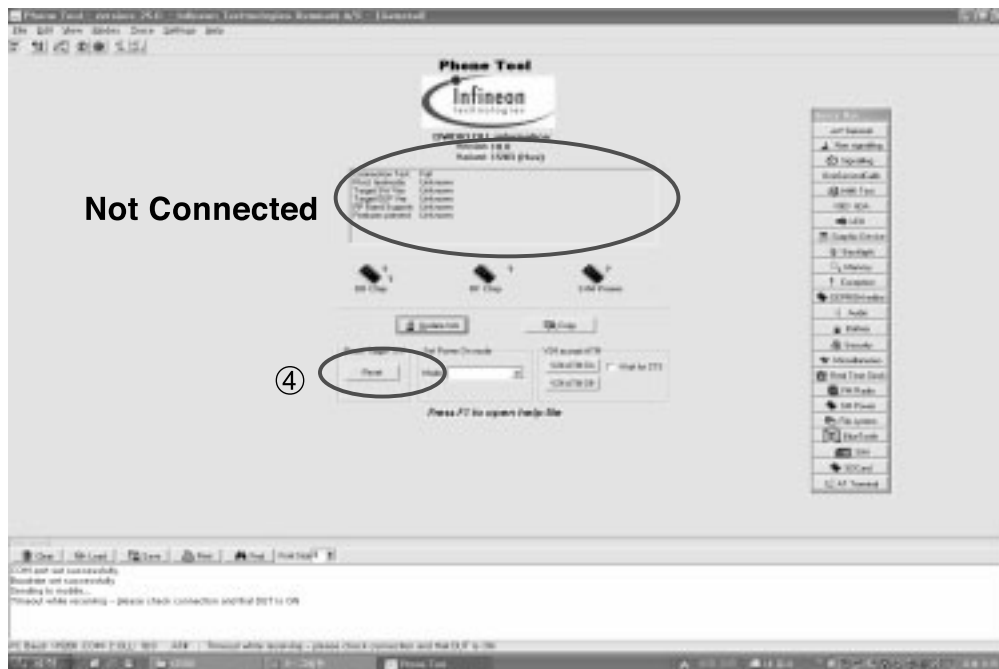
### 11.1 Test Program Setting

- ① Set COM Port.
- ② Check PC Baud rate.
- ③ Confirm EEPROM & Delta file prefix name.



## 11. STANDALONE TEST

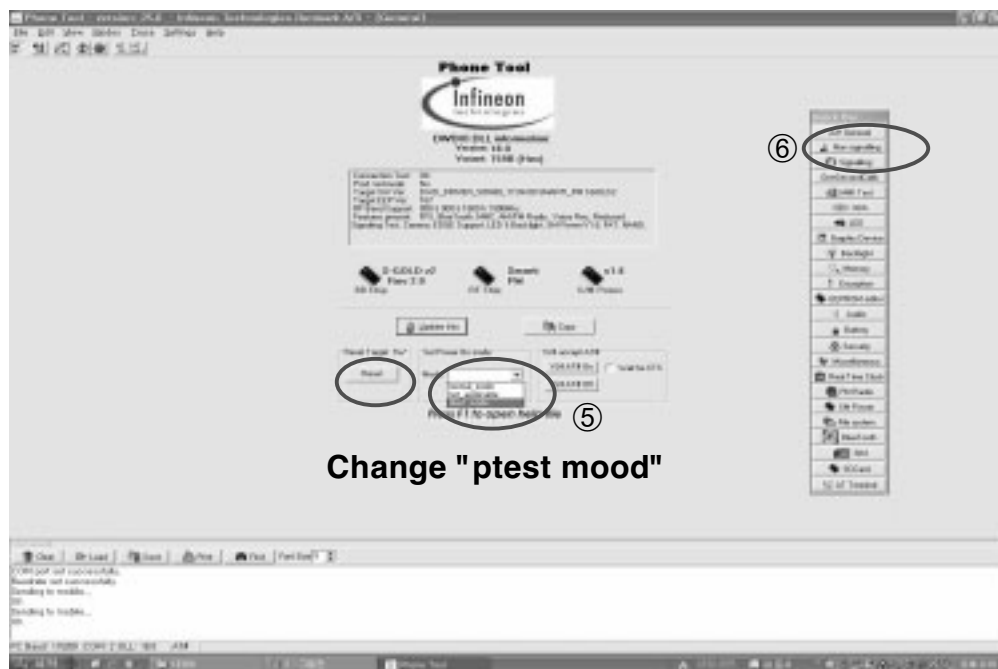
- ④ Click “Update Info” for communicating Phone and Test -Program.



## 11. STANDALONE TEST

---

- ⑤ For the purpose of the Standalone Test, Change the Phone to “ptest mode” and then Click the “Reset” bar.
- ⑥ Select “Non signaling” in the Quick Bar menu. Then Standalone Test setup is finished.



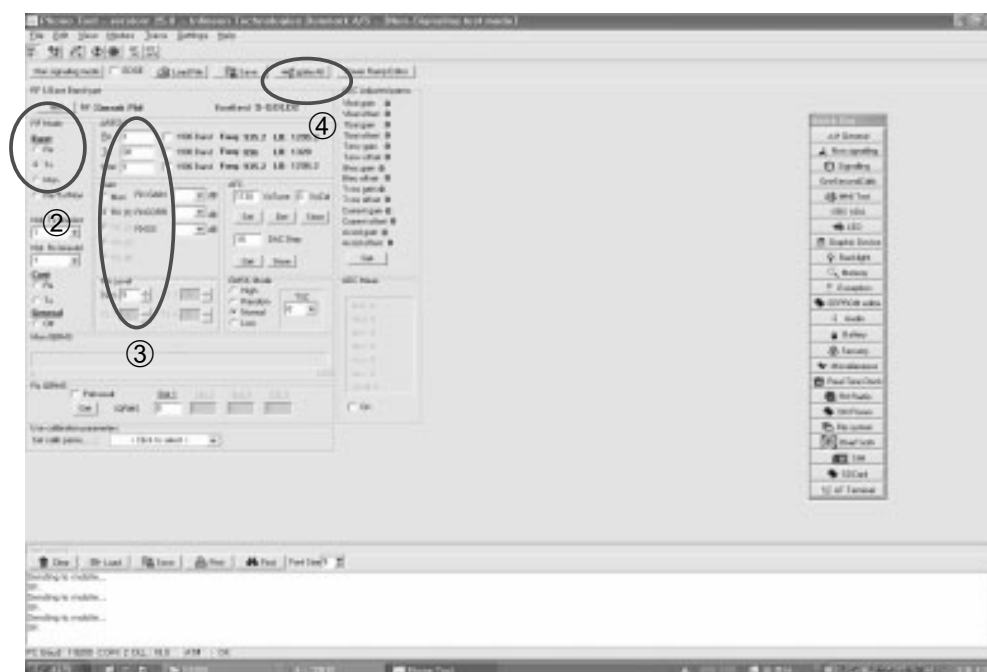
## 11. STANDALONE TEST

### 11.2 Tx Test

- ① Click “Non signaling mode” bar and then confirm “OK” text in the command line.
- ② Put the number of TX Channel in the ARFCN.



- ③ Select “Tx” in the RF mode menu and “PCL” in the PA Level menu.
- ④ Finally, Click “Write All” bar and try the efficiency test of Phone.

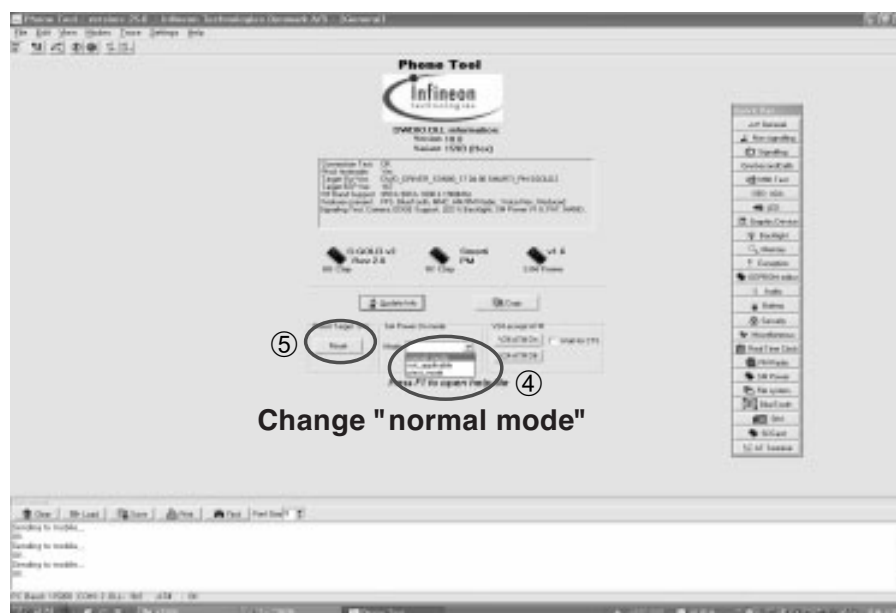


### 11.3 Rx Test

- ① Put the number of RX Channel in the ARFCN.
- ② Select “Rx” in the RF mode menu.
- ③ Finally, Click “ Write All” bar and try the efficiency test of Phone.

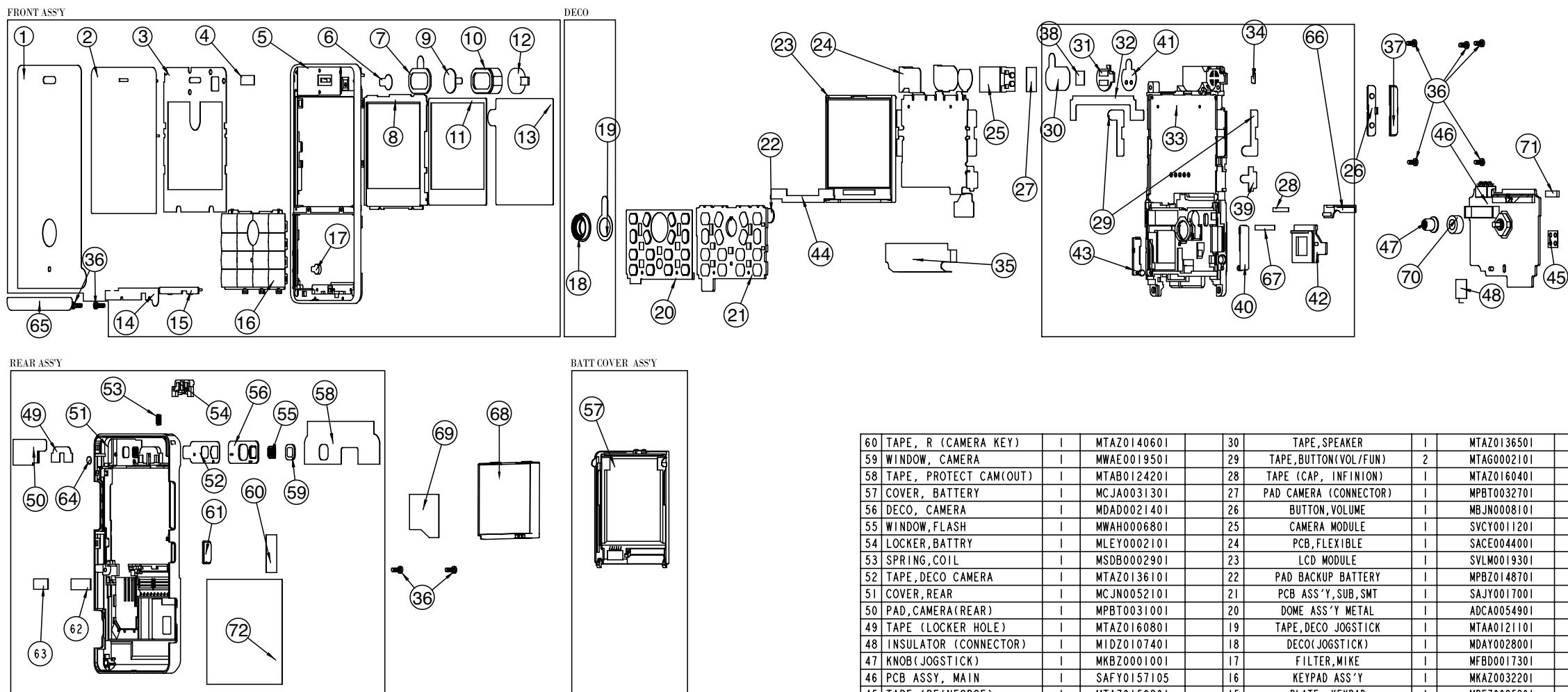


- ④ The Phone must be changed “normal mode” after finishing Test.
- ⑤ Change the Phone to “normal mode” and then Click the “Reset” b ar.



# 12. EXPLODED VIEW & REPLACEMENT PART LIST

## 12.1 EXPLODED VIEW



NO	MODEL	PHONE	COVER ASS'Y FOLDER	COVER ASS'Y FRONT	FRAME ASS'Y	REAR ASS'Y	BATT ASS'Y
1	KG99	APEY0347201	ACGG0077002	ACGK0070002	AFBZ0006401	ACGM0070601	ACGA0017601

NO	DESCRIPTION	DRAWING NO	구분명
1	COVER ASS'Y FRONT	ACGG0077002	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
2	FRAME ASS'Y	AFBZ0006401	28, 29, 30, 31, 32, 33, 34, 38, 39, 40, 41, 42, 43, 66, 67
3	DECO	MDAY0028601	18, 19
4	COVER ASS'Y REAR	ACGG0077002	49, 50, 51, 52, 53, 54, 55, 56, 58, 59, 60, 61, 62, 63, 64, 72
5	PCB ASS'Y MAIN	ACGG0077002	45, 46, 47, 48, 70, 71
6	PCB ASS'Y SUB	SAJY0017001	20, 21
7	BATT ASS'Y	ACGG0077002	57

72	TAPE, PROTECTION (REAR)	I	MTAB0141801	
71	PAD, BATTERY	I	MPBZ0156401	
70	PAD (KNOB)	I	MPBZ0156301	
69	LABEL APPROVAL	I	MLAK0020901	
68	BATTERY PACK	I	SBPL0082901	
67	TAPE (CAP, FRAME)	I	MTAZ0141001	
66	CAP, FRAME	I	MCCZ0021201	
65	DECO ASS'Y (ANTENNA)	I	ADBY0010601	
64	LABEL A/S	I	MLAB0000601	
63	PAD, FLEXIBLE PCB (L)	I	MPBF0018001	
62	PAD, FLEXIBLE PCB (R)	I	MPBF0017901	
61	BUTTON, SHUTTER	I	MBJP0005101	
NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK

60	TAPE, R (CAMERA KEY)	I	MTAZ0140601	30	TAPE, SPEAKER	I	MTAZ0136501
59	WINDOW, CAMERA	I	MWAE0019501	29	TAPE, BUTTON (VOL/FUN)	2	MTAG0002101
58	TAPE, PROTECT CAM(OUT)	I	MTAB0124201	28	TAPE (CAP, INFINION)	I	MTAZ0160401
57	COVER, BATTERY	I	MCJA0031301	27	PAD CAMERA (CONNECTOR)	I	MPBT0032701
56	DECO, CAMERA	I	MDAD0021401	26	BUTTON, VOLUME	I	MBJN0008101
55	WINDOW, FLASH	I	MWAH0006801	25	CAMERA MODULE	I	SVCY0011201
54	LOCKER, BATTERY	I	MLEY0002101	24	PCB, FLEXIBLE	I	SACE0044001
53	SPRING, COIL	I	MSDB0002901	23	LCD MODULE	I	SVLM0019301
52	TAPE, DECO CAMERA	I	MTAZ0136101	22	PAD BACKUP BATTERY	I	MPBZ0148701
51	COVER, REAR	I	MCJN0052101	21	PCB ASS'Y, SUB, SMT	I	SAJY0017001
50	PAD, CAMERA (REAR)	I	MPBT0031001	20	DOME ASS'Y METAL	I	ADCA0054901
49	TAPE (LOCKER HOLE)	I	MTAZ0160801	19	TAPE, DECO JOGSTICK	I	MTAA0121101
48	INSULATOR (CONNECTOR)	I	MIDZ0107401	18	DECO (JOGSTICK)	I	MDAY0028001
47	KNOB (JOGSTICK)	I	MKBZ0001001	17	FILTER, MIKE	I	MFB00017301
46	PCB ASSY, MAIN	I	SAFY0157105	16	KEYPAD ASS'Y	I	MKAZ0032201
45	TAPE (REINFORCE)	I	MTAZ0150801	15	PLATE, KEYPAD	I	MPFZ0025201
44	PAD, DRIVE IC	I	MPBZ0148901	14	TAPE, DECO (FRONT)	I	MTAA0121001
43	CAP, MULTIMEDIA CARD	I	MCCG0006201	13	TAPE, PROTECTION (IN)	I	MTAB0123501
42	CAP (INFINION)	I	MCCZ0021101	12	VIBRATOR	I	SJMY0008403
41	TAPE (MOTOR FRAME)	I	MTAZ0151001	11	PAD, LCD	I	MPBG0049201
40	CAP, EARPHONE JACK	I	MCCC0038501	10	SPEAKER	I	SUSY0020301
39	TAPE, BUTTON (CAMERA)	I	MTAG0002201	9	SHEET, MOTOR	I	MSAZ0043001
38	TAPE (CAP, MOTOR)	I	MTAZ0147201	8	BRACKET, LCD	I	MBFF0010601
37	BUTTON, FUNCTION	I	MBJC0019401	7	PAD, RECEIVER	I	MPBM0014501
36	SCREW, MACHINE	9	GMZZ0017501	6	TAPE, CAMERA (FRONT)	I	MTAZ0136001
35	ANTENNA	I	SNGF0018701	5	COVER, FRONT	I	MCJK0056901
34	TAPE, LED	I	MTAZ0146101	4	FILTER, RECEIVER	I	MFB00017301
33	FRAME	I	MFEZ0010001	3	TAPE, WINDOW	I	MTAD0056001
32	TAPE, FPC	I	MTAZ0136401	2	WINDOW, LCD ASS'Y	I	AWAZ0008301
31	CAP, MOTOR	I	MCCZ0021401	1	TAPE, PROTECTION (OUT)	I	MTAB0124001



## 12. EXPLODED VIEW & REPLACEMENT PART LIST

### 12.2 Replacement Parts <Mechanic component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
1		GSM,BAR/FILP	TGSM0048801		Black	
2	AAAY00	ADDITION	AAAY0174507		Black	
3	MCJA00	COVER ASSY,BATTERY	ACGA0017601	COMMON USE	Black	
4	MCJA00	COVER,BATTERY	MCJA0031301	MOLD, PC LUPOY SC-1004A, , , ,	Black	57
4	MLAD00	LABEL,BATTERY	MLAD0002501	COMPLEX, (empty), , , ,	Transparent	
2	APEY00	PHONE	APEY0272006		Black	
3	ACGK00	COVER ASSY,FOLDER	ACGG0077003	EUROPE	Black	
4	ACGK00	COVER ASSY,FRONT	ACGK0070003	EUROPE	Black	
5	AWAZ00	WINDOW ASSY	AWAZ0008301	IMD	Black	2
6	BFAA00	FILM,INMOLD	BFAA0041301	MAIN WINDOW IN-MOLD FILM		
6	MWAC00	WINDOW,LCD	MWAC0071101	KE820(IML)	Black	
5	MBFF00	BRACKET,LCD	MBFF0010601	MOLD, PC LUPOY GP-2100, , , ,		8
5	MCJK00	COVER,FRONT	MCJK0056901	MOLD, PC LUPOY SC-1004A, , , ,	Black	5
6	MICD00	INSERT,BAR	MICD0001601			
5	MFBB00	FILTER,RECEIVER	MFBB0017301	COMPLEX, (empty), , , ,	Black	4
5	MFBD00	FILTER,MIKE	MFBD0017301	COMPLEX, (empty), , , ,	Black	17
5	MKAZ00	KEYPAD	MKAZ0032201	COMPLEX, (empty), , , ,	Black	16
5	MPBG00	PAD,LCD	MPBG0049201	COMPLEX, (empty), , , ,	Black	11
6	MTAB00	TAPE,PROTECTION	MTAB0123501	COMPLEX, (empty), , , ,	Transparent	13
5	MPBM00	PAD,RECEIVER	MPBM0014501	COMPLEX, (empty), , , ,	Black	7
5	MPFZ00	PLATE	MPFZ0025201	MOLD, PC LUPOY SC-1004A, , , ,	Black	15
5	MSAZ00	SHEET	MSAZ0043001	COMPLEX, (empty), , , ,	Black	9
5	MTAA00	TAPE,DECO	MTAA0121001	COMPLEX, (empty), , , ,	White	14
5	MTAB01	TAPE,PROTECTION	MTAB0124001	COMPLEX, (empty), , , ,		1
5	MTAD02	TAPE,WINDOW	MTAD0056001	COMPLEX, (empty), , , ,	Transparent	3
5	MTAZ03	TAPE	MTAZ0136001	COMPLEX, (empty), , , ,	Transparent	6
4	AFBZ00	FRAME ASSY	AFBZ0006401		Black	
5	MCCC00	CAP,EARPHONE JACK	MCCC0038501	COMPLEX, (empty), , , ,	Black	40
5	MCCG00	CAP,MULTIMEDIA CARD	MCCG0006201	COMPLEX, (empty), , , ,	Black	43
5	MCCZ00	CAP	MCCZ0021201	MOLD, Silicone Rubber KE941-U, , , ,	Black	66
6	MTAZ00	TAPE	MTAZ0141001	COMPLEX, (empty), , , ,		67
5	MCCZ01	CAP	MCCZ0021101	MOLD, Silicone Rubber KE941-U, , , ,	Black	42
6	MTAZ00	TAPE	MTAZ0160401	COMPLEX, (empty), , , ,	Transparent	28

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	MCCZ02	CAP	MCCZ0021401	MOLD, Urethane Rubber S190A, , , , ,	Black	31
6	MTAZ00	TAPE	MTAZ0147201	COMPLEX, (empty), , , , ,	Transparent	38
5	MFEZ00	FRAME	MFEZ0010001	MOLD, PC LUPOY SC-1004A, , , , ,	Black	33
5	MPBJ00	TAPE	MTAZ0151001	COMPLEX, (empty), , , , ,	Black	41
5	MTAG00	TAPE,BUTTON	MTAG0002101	COMPLEX, (empty), , , , ,	Transparent	29
5	MTAG01	TAPE,BUTTON	MTAG0002201	COMPLEX, (empty), , , , ,	Transparent	39
5	MTAZ01	TAPE	MTAZ0136401	COMPLEX, (empty), , , , ,	Transparent	32
5	MTAZ02	TAPE	MTAZ0136501	COMPLEX, (empty), , , , ,	Transparent	30
5	MTAZ03	TAPE	MTAZ0146101	COMPLEX, (empty), , , , ,	Transparent	34
4	GMZZ00	SCREW MACHINE	GMZZ0017501	1.4 mm,3.5 mm,MSWR3 ,N ,+ , - ,NYLOK,HEAD PIE2.5	Silver	36
4	MBJC00	BUTTON,FUNCTION	MBJC0019401	COMPLEX, (empty), , , , ,	Black	37
4	MBJN00	BUTTON,VOLUME	MBJN0008101	COMPLEX, (empty), , , , ,	Black	26
4	MDAY00	DECO	MDAY0028001	MOLD, ABS MP-211, , , , ,	Silver	18
5	MTAA00	TAPE,DECO	MTAA0121101	COMPLEX, (empty), , , , ,	Transparent	19
4	MLAC00	LABEL,BARCODE	MLAC0003401	EZ LOOKS(user for mechanical)		
4	MPBT00	PAD,CAMERA	MPBT0032701	COMPLEX, (empty), , , , ,	Black	27
4	MPBZ00	PAD	MPBZ0148701	COMPLEX, (empty), , , , ,	Black	22
4	MPBZ01	PAD	MPBZ0148901	COMPLEX, (empty), , , , ,	Black	44
3	ACGM00	COVER ASSY,REAR	ACGM0070601		Black	
4	MBJP00	BUTTON,SHUTTER	MBJP0005101	MOLD, PC LUPOY SC-1004A, , , , ,	Black	61
4	MCJN00	COVER,REAR	MCJN0052101	MOLD, PC LUPOY SC-1004A, , , , ,	Black	51
5	MICZ00	INSERT	MICZ0027101			
4	MDAD00	DECO,CAMERA	MDAD0021401	MOLD, ABS MP-211, , , , ,	Silver	56
4	MLAB00	LABEL,A/S	MLAB0000601	HUMIDITY STICKER		
4	MLEY00	LOCKER	MLEY0002101	MOLD, PC LUPOY SC-1004A, , , , ,	Black	54
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0017901	COMPLEX, (empty), , , , ,	Black	62
4	MPBF01	PAD,FLEXIBLE PCB	MPBF0018001	COMPLEX, (empty), , , , ,	Black	63
4	MPBT00	PAD,CAMERA	MPBT0031001	COMPLEX, (empty), , , , ,	Black	50
4	MSDC00	SPRING,COIL	MSDB0002901		Metal Gray	53
4	MTAB01	TAPE,PROTECTION	MTAB0124201	COMPLEX, (empty), , , , ,		58
4	MTAB02	TAPE,PROTECTION	MTAB0141801	COMPLEX, (empty), , , , ,	Transparent	72
4	MTAZ00	TAPE	MTAZ0136101	COMPLEX, (empty), , , , ,	Transparent	52
4	MTAZ01	TAPE	MTAZ0140601	COMPLEX, (empty), , , , ,	Transparent	60
4	MTAZ02	TAPE	MTAZ0160801	COMPLEX, (empty), , , , ,	Blue	49
4	MWAE00	WINDOW,CAMERA	MWAE0019501	MOLD, PC LUPOY SC-1004ML, , , , ,	Transparent	59
4	MWAH00	WINDOW,FLASH	MWAH0006801	MOLD, PC LUPOY SC-1004ML, , , , ,	White	55
3	GMZZ00	SCREW MACHINE	GMZZ0017501	1.4 mm,3.5 mm,MSWR3 ,N ,+ , - ,NYLOK,HEAD PIE2.5	Silver	

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
3	MDAG00	DECO ASSY	ADBY0010601	KE820 Front Deco	Black	
4	BFAA00	FILM,INMOLD	BFAA0041401	DECO FRONT IN-MOLD FILM		
4	MDAG00	DECO,FRONT	MDAG0018801			
3	MLAK00	LABEL,MODEL	MLAK0019102	EUROP & CIS		
5	MIDZ00	INSULATOR	MIDZ0107401	COMPLEX, (empty), , , ,	Blue	48
5	MKBZ00	KNOB	MKBZ0001001	MOLD, PC LUPOY SC-1004A, , , ,	Silver	47
5	MPBZ00	PAD	MPBZ0156401	COMPLEX, (empty), , , ,	Black	71
5	MPBZ01	PAD	MPBZ0156301	COMPLEX, (empty), , , ,	Black	70
5	MTAZ00	TAPE	MTAZ0150801	COMPLEX, (empty), , , ,	Transparent	45
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0081106			
5	MLAB00	LABEL,A/S	MLAB0000601	HUMIDITY STICKER		65
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

### <Main component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
5	SJMY00	VIBRATOR,MOTOR	SJMY0008403	3 V,0.08 A,10*2.7 , , ,3V , , , , , , , ,		12
5	SUSY00	SPEAKER	SUSY0020301	PIN ,8 ohm,88 dB,17 mm,10mm,4T , , ,0.6W , , , , ,PIN		10
4	AFBZ00	FRAME ASSY	AFBZ0006401		Black	
4	SACY00	PCB ASSY,FLEXIBLE	SACY0049201			
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0044001			24
6	SACC00	PCB ASSY,FLEXIBLE, SMT BOTTOM	SACC0026301			
7	CN2	CONNECTOR, BOARD TO BOARD	ENBY0015601	34 PIN,0.4 mm,STRAIGHT ,AU ,0.9MM HEIGHT		
6	SACD00	PCB ASSY,FLEXIBLE, SMT TOP	SACD0036401			
7	CN1	CONNECTOR, BOARD TO BOARD	ENBY0022401	50 PIN,0.4 mm,ETC , ,H=0.9, Header		
7	LD400	DIODE,LED,MODULE	EDLM0008501	WHITE ,1 LED,2.0*1.5*0.45 ,R/TP ,pb-free(power LED)		
7	SW1	SWITCH,TACT	ESCY0004201	12 V,0.02 A,HORIZONTAL ,0.2 G,		
6	SPCY00	PCB,FLEXIBLE	SPCY0075501	POLYI , mm,MULTI-2 ,		
4	SAJY00	PCB ASSY,SUB	SAJY0017001	KE820 RUS, EDGE Phone, SUB PCB		21
5	ADCA00	DOME ASSY,METAL	ADCA0054901			20
5	SAJE00	PCB ASSY,SUB,SMT	SAJE0011901			
6	SAJC00	PCB ASSY,SUB,SMT BOTTOM	SAJC0011001			
7	ANT100	ANTENNA,GSM,FIXED	SNGF0018601	3.0 ,-2.0 dBd, ,bluetooth, chip , , ,SINGLE , , ,		
7	BAT100	BATTERY,CELL,LITHIUM	SBCL0001701	2 V,0.5 mAh,CYLINDER ,Reflow type BB, Max T 1.67, phi 4.8, Pb-Free		
7	C100	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C101	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C102	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C103	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C104	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C105	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C108	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
7	C109	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
7	C110	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C111	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C112	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
7	C113	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
7	C114	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C115	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C116	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C117	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C118	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C119	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C120	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C121	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C122	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C123	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
7	C124	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
7	C125	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C126	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C127	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
7	C128	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C129	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
7	C130	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C131	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C132	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C133	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C134	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
7	C140	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C141	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C142	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
7	C143	CAP,CHIP,MAKER	ECZH0003202	1 uF,6.3V ,Z ,Y5V ,HD ,1005 ,R/TP		
7	C144	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C147	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C148	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C149	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C151	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C153	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C154	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C155	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C156	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
7	C157	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C160	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
7	C161	CAP,CHIP,MAKER	ECZH0000803	2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
7	C162	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C163	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C164	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C165	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C166	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C167	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C168	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C169	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	CN100	CONNECTOR,I/O	ENRY0006401	18 PIN,0.4 mm,ANGLE , ,H=2.5, Reverse Type		
7	CN101	CONNECTOR, BOARD TO BOARD	ENBY0035601	80 PIN,.4 mm,ETC , ,H=3.5, Plug		
7	D1	DIODE,SWITCHING	EDSY0005701	EMT3 ,80 V,4 A,R/TP ,		
7	FB100	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
7	FB101	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
7	FB102	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
7	FL100	FILTER,CERAMIC	SFCY0000901	2450 MHz,2.00*1.25*0.95 ,SMD ,Bluetooth Band Pass Filter		
7	FL101	FILTER,DIELECTRIC	SFDY0001601	2450 MHz,2.0*1.25 ,SMD ,Pb-free_Bluetooth_Dielectric		
7	L100	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L101	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L102	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L104	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	L105	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	L107	INDUCTOR,CHIP	ELCH0009114	100 nH,J ,1005 ,R/TP ,coil		
7	L108	INDUCTOR,CHIP	ELCH0010302	100 nH,J ,1608 ,R/TP ,chip coil		
7	L109	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L110	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L111	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L112	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
7	L113	INDUCTOR,CHIP	ELCH0010302	100 nH,J ,1608 ,R/TP ,chip coil		
7	MIC100	MICROPHONE	SUMY0010602	UNIT , -42 dB,6.15*3.76*1.25 ,Silicon mic , , -42 ,300 ,OMNI ,[empty] ,6.15*3.76*1.25 ,SMD		
7	Q1	TR,FET,P-CHANNEL	EQFP0003601	SOT-363 ,.27 W,20 V,.66 A,R/TP ,Dual(P-channel:PD=0.27W,VDS=-8V,ID=0.57, Pb free		
7	R102	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
7	R103	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R105	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R106	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R108	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
7	R109	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
7	R110	RES,CHIP,MAKER	ERHZ0000445	220 Kohm,1/16W ,J ,1005 ,R/TP		
7	R111	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
7	R116	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R118	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R119	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R120	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R122	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R127	INDUCTOR,CHIP	ELCH0004723	1.8 nH,S ,1005 ,R/TP ,		
7	R128	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	R129	INDUCTOR,CHIP	ELCH0004723	1.8 nH,S ,1005 ,R/TP ,		
7	R130	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R131	RES,CHIP,MAKER	ERHZ0000464	330 ohm,1/16W ,J ,1005 ,R/TP		
7	R132	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R133	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R134	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R135	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R136	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R137	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R141	RES,CHIP,MAKER	ERHZ0000245	220 Kohm,1/16W ,F ,1005 ,R/TP		
7	R142	RES,CHIP,MAKER	ERHZ0000476	39 Kohm,1/16W ,J ,1005 ,R/TP		
7	R143	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
7	R144	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
7	R148	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
7	R149	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
7	R150	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R151	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
7	R152	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
7	R153	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
7	R154	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
7	R156	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R157	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R168	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R176	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R177	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R178	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R180	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
7	R181	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R182	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
7	R183	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R184	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R185	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	S100	CONN,SOCKET	ENSY0015801	8 PIN,ETC , ,1.1 mm,H=1.9, Detect Pin		
7	U100	IC	EUSY0077701	SC70-5 ,5 PIN,R/TP ,1.8V Low Voltage Comparator with Rail-to-Rail Input, Pb Free		
7	U102	IC	EUSY0274901	P-WFSGA-65(5*5*0.8) ,65 PIN,R/TP ,True Single Chip Bluetooth2.0+EDR solution		
7	U104	IC	EUSY0292601	DFN ,8 PIN,R/TP ,Li-ion charger IC, 8 Ld 2 x 3 DFN, Pb-free		
7	U105	IC	EUSY0277201	QFN ,24 PIN,R/TP ,FM Tuner Chip, 4X4mm, Pb-Free		
7	U106	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
7	U107	IC	EUSY0278501	SON5-P-0.50 ,5 PIN,R/TP ,INVERTER GATE, Pb Free		
7	U108	IC	EUSY0077301	SC70-6 ,6 PIN,R/TP ,SPDT Analog switch		
7	VA100	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
7	VA102	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
7	ZD1	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
7	ZD2	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
7	ZD3	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
7	ZD4	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
7	ZD5	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
7	ZD6	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
7	ZD7	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
6	SAJD00	PCB ASSY,SUB,SMT TOP	SAJD0013201			
7	LD100	DIODE,LED,CHIP	EDLH0003401	RED, GREEN ,ETC ,R/TP ,SIZE 1315 , GSM DUAL LED		
7	LD101	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD102	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD103	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD105	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD106	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD107	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	LD108	DIODE,LED,CHIP	EDLH0012501	Snow White ,1608 ,R/TP ,color concept		
7	R158	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R159	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R160	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R162	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
7	R163	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R164	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R165	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	SPJY00	PCB,SUB	SPJY0027401	FR-4 , 0.8mm,BUILD-UP 8 ,		
4	SVCY00	CAMERA	SVCY0011201	CMOS ,MEGA ,2M AF FPCB (Micron 1/3" , SOC2010)		25
4	SVLM00	LCD MODULE	SVLM0019301	MAIN ,220*176,2.0 ,45.7*42.4*1.9 ,262k ,TFT ,TM ,S1D19120 EPSON ,Landscape Type		23
3	SAFY00	PCB ASSY,MAIN	SAFY0157105			46
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0064101			
5	SAFC00	PCB ASSY,MAIN, SMT BOTTOM	SAFC0071701			
6	C201	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C203	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C214	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
6	C215	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C232	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C236	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C237	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C238	CAP,CHIP,MAKER	ECZH0026301	4.7 uF,6.3V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C239	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C240	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C241	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C242	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C243	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C244	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C245	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C246	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C247	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C248	CAP,CHIP,MAKER	ECZH0001210	470 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C249	CAP,CHIP,MAKER	ECZH0003121	68 nF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C250	CAP,CHIP,MAKER	ECZH0003121	68 nF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C251	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C301	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C302	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C304	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C306	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C308	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C309	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C310	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C401	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C402	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C403	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C404	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C408	CAP,TANTAL,CHIP,MAKER	ECTZ0004203	68 uF,6.3V ,M ,STD ,3216 ,R/TP		
6	C409	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C414	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C416	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C417	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C419	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C420	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C421	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C422	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C423	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C424	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C425	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C426	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C427	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C428	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C429	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C430	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C431	CAP,CHIP,MAKER	ECZH0003202	1 uF,6.3V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C436	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C437	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C439	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C440	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C441	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C442	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C443	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C444	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C445	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C446	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		
6	C447	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C448	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C451	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C452	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C453	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C454	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C456	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C457	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	CN101	CONNECTOR, BOARD TO BOARD	ENBY0029001	30 PIN,0.4 mm,ETC , ,P4S, Header		
6	CN301	CONNECTOR, BOARD TO BOARD	ENBY0022501	50 PIN,0.4 mm,ETC , ,H=0.9, Socket		
6	CN303	CONNECTOR, BOARD TO BOARD	ENBY0023901	30 PIN,0.4 mm,ETC , ,H=0.9, Socket		
6	FB301	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL301	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL302	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL303	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL304	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL305	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL306	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL307	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL308	FILTER,SEPERATOR	SFAY0007201	850.900 ,1800.1900 ,4.0 dB,4.0 dB, dB, dB,ETC , Quad band FEM		
6	J301	CONN,SOCKET	ENSY0017101	6 PIN,ETC , ,2.54 mm,H=1.0		
6	L202	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L402	INDUCTOR,CHIP	ELCH0005014	5.6 nH,S ,1005 ,R/TP ,		
6	L403	INDUCTOR,CHIP	ELCH0005014	5.6 nH,S ,1005 ,R/TP ,		
6	L404	INDUCTOR,CHIP	ELCH0004714	18 nH,J ,1005 ,R/TP ,		
6	L405	INDUCTOR,CHIP	ELCH0004714	18 nH,J ,1005 ,R/TP ,		
6	L406	INDUCTOR,CHIP	ELCH0004706	10 nH,J ,1005 ,R/TP ,		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	L407	INDUCTOR,CHIP	ELCH0001019	3.9 nH,J ,1005 ,R/TP ,Pb Free		
6	PT401	THERMISTOR	SETY0006301	NTC ,10000 ohm,SMD ,1005, 3350~3399k, J, R/T, PBFREE		
6	Q202	TR,BJT,NPN	EQBN0007001	SC-70 ,.1 W,R/TP ,Pb free		
6	Q301	TR,FET,P-CHANNEL	EQFP0004501	SOT-323 ,.29 W,1.8 V,.86 A,R/TP ,P-Chanel MOSFET, Pb free		
6	R201	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R205	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R212	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R221	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R222	RES,CHIP,MAKER	ERHZ0000410	12 ohm,1/16W ,J ,1005 ,R/TP		
6	R223	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R224	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R228	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R229	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R231	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R233	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R234	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R235	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R236	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R237	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R238	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R300	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R301	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R302	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R303	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R304	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R305	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R306	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R307	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R308	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R309	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R315	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R317	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R320	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R323	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R324	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R325	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R326	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R403	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R405	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R407	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R408	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R412	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R413	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R414	RES,CHIP	ERHY0000185	820 ohm,1/16W ,F ,1005 ,R/TP		
6	R417	RES,CHIP,MAKER	ERHZ0000444	22 Kohm,1/16W ,J ,1005 ,R/TP		
6	R418	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R419	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R423	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R424	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R425	RES,CHIP,MAKER	ERHZ0000501	620 ohm,1/16W ,J ,1005 ,R/TP		
6	R426	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R427	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R428	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R429	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R430	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R431	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R434	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R436	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R437	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R441	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R442	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	R448	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R449	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R451	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	U202	IC	EUSY0238302	TDFN44-16 ,16 PIN,R/TP ,4LED, Flash (up to 250mA)Charge pump,PBFFREE		
6	U205	IC	EUSY0304401	DFN ,10 PIN,R/TP ,2.8V/3.3V 300mA Dual LDO		
6	U207	IC	EUSY0160401	SOT-23 ,3 PIN,R/TP ,DC MOTOR DRIVER / INTEGRATED RELAY		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	U208	IC	EUSY0300101	WQFN , 10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U209	IC	EUSY0314501	QFN , 16 PIN,R/TP ,		
6	U210	IC	EUSY0243201	Micro SMD ,25 PIN,R/TP ,Output Capacitor Audio Subsystem		
6	U211	IC	EUSY0300101	WQFN , 10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U401	PAM	SMPY0010501	35 dBm,47 % , A, dBc, dB,6X6 ,SMD ,QFN ,23 PIN,R/TP ,QBAND GSM/EDGE PAM 6X6		
6	U402	IC	EUSY0274801	VQFN ,40 PIN,R/TP ,GPRS, EDGE TRANSCEIVER		
6	VA301	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	VA302	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	VA303	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	VA304	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	VA305	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	VA306	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	VA307	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	VA308	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	VA309	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	X401	VCTCXO	EXSK0005603	26 MHz,2 PPM,10 pF,SMD ,3.2*2.5*0.9 ,2.5ppm at -20 to +75, AFC 0.5V to 2.5V, Supply 2.6V		
6	ZD1	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
6	ZD2	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0071301			
6	ANT405	CONNECTOR,ETC	ENZY0017901	1 PIN, mm,ETC , ,Antenna Pin(L)		
6	C101	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C102	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C103	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C107	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C109	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C110	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C115	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C117	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C119	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C123	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C124	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C126	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C128	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C130	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C131	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C135	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C136	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C204	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C205	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C207	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C208	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C209	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C210	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C211	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C212	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C213	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C217	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C218	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C221	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	C222	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
6	C226	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C227	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C228	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C229	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C233	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C234	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C235	CAP,TANTAL,CHIP,MAKER	ECTZ0004204	100 uF,6.3V ,M ,STD ,3216 ,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0000180	3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C407	INDUCTOR,CHIP	ELCH0004708	2.7 nH,S ,1005 ,R/TP ,		
6	C438	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C450	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
6	CN201	CONNECTOR,ETC	ENZY0016301	3 PIN,3.0 mm,ETC , ,H=2.0		
6	CN302	CONNECTOR, BOARD TO BOARD	ENBY0035501	80 PIN,.4 mm,ETC , ,H=3.5, Socket		
6	D201	DIODE,SWITCHING	EDSY0005201	SMD ,30 V,1.5 A,R/TP ,		
6	FB201	FILTER,BEAD,CHIP	SFBH0001003	220 ohm,2012 ,		
6	L201	INDUCTOR,SMD,POWER	ELCP0005104	10 uH,M ,3.8*3.8*1.8 ,R/TP ,power inductor/ 850mA		
6	Q201	TR,FET,P-CHANNEL	EQFP0008301	TSOP-6 ,1.14 W,-30 V,-3.7 A,R/TP ,P-Channel FET		
6	Q302	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		
6	R101	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R102	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R103	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R106	RES,CHIP	ERHY0000132	22K ohm,1/16W,F,1005,R/TP		
6	R108	RES,CHIP	ERHY0000166	390 Kohm,1/16W ,F ,1005 ,R/TP		
6	R109	RES,CHIP,MAKER	ERHZ0000465	3300 ohm,1/16W ,J ,1005 ,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R113	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R114	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R117	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R118	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R122	RES,CHIP,MAKER	ERHZ0000465	3300 ohm,1/16W ,J ,1005 ,R/TP		
6	R123	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Specification	Color	Remark
6	R124	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R126	RES,CHIP,MAKER	ERHZ0000444	22 Kohm,1/16W ,J ,1005 ,R/TP		
6	R136	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R137	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R202	RES,CHIP,MAKER	ERHZ0000445	220 Kohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000444	22 Kohm,1/16W ,J ,1005 ,R/TP		
6	R204	RES,CHIP	ERHY0011901	47 mohm,1/4W ,F ,2012 ,R/TP		
6	R207	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R208	RES,CHIP,MAKER	ERHZ0000487	470 Kohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R213	RES,CHIP	ERHY0000278	82K ohm,1/16W,J,1005,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R216	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R219	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R220	RES,CHIP	ERHY0000715	0.15 ohm,1/8W ,F ,2012 ,R/TP		
6	R310	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R311	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R312	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R313	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R314	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R316	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R321	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R322	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R406	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R443	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R444	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R450	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	SW301	SWITCH,TACT	ESCY0004001	15 V,0.02 A,VERTICAL ,1.3 G,		
6	SW401	CONN,RF SWITCH	ENWY0002301	ANGLE ,SMD ,0.8 dB,		
6	U101	IC	EUSY0286001	BGA ,105 PIN,R/TP ,512M Nor+128MSDRAM, 1.8V I/O(Sibely),Pb Free		
6	U102	IC	EUSY0274601	BGA ,293 PIN,R/TP ,EDGE BASE BAND S-GOLD2		
6	U201	IC	EUSY0286901	SOT23-5 ,5 PIN,R/TP ,2.5V Sense voltage(max), current monitor		
6	U203	IC	EUSY0269101	PG-VQFN-48 ,48 PIN,R/TP ,PMIC, Pb Free		
6	U204	IC	EUSY0077301	SC70-6 ,6 PIN,R/TP ,SPDT Analog switch		
6	U206	IC	EUSY0102802	Micropak ,8 PIN,R/TP ,Daul 2 input AND gate,		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Specification	Color	Remark
6	X101	X-TAL	EXXY0018701	32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9,		
5	SPFY00	PCB,MAIN	SPFY0127401	FR-4 , 0.8mm,STAGGERED-10 ,		
5	WSYY00	SOFTWARE	WSYY0446801	; , , ,EUROPE , ,		
3	SNGF00	ANTENNA,GSM,FIXED	SNGF0018701			35

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

### 12.3 Accessory

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Specification	Color	Remark
3	ADEY00	DATA KIT	ADEY0006802	KE820 CD Assy for English		
4	MBAZ00	BAG	MBAZ0004701	CD Cover		
4	MCHZ00	COMPACT DISK	MCHZ0026201	ELECTROFORMING, Ni, , , ,	Black	
4	MMBA00	MANUAL,INSTALLATION	MMBA0018501	Installation guide for Mobile Agent		
4	MSFG00	STICKER,SEAL	MSFG0000801	Steaker seal of Data kit case		
3	ENSY00	CONN,SOCKET	ENSY0015401	9 PIN,ETC , , mm,SD Adaptor for TFR		
3	MCEZ00	CASE	MCEZ0003101	COMPLEX, (empty), , , ,		
3	MCEZ01	CASE	MCEZ0001201	SD Card Case		
3	SBPL00	BATTERY PACK,LI-ION	SBPL0082901	3.7 V,730 mAh,1 CELL,PRISMATIC ,KE820 BATT(IP), Pb-Free		68
3	SGDY00	DATA CABLE	SGDY0010901	LG-US03K ,18pin USB DataCable		
3	SGEY00	EAR PHONE/ EAR MIKE SET	SGEY0004213	SON80,KG808,818CHINA ,SON80CHINA(R+VE)18P		
3	SMZY00	MODULE,ETC	SMZY0011403	MICROSD CARD / 128MB		
		MODULE,ETC	SMZY0013202	External Type,BK ,128M Micro SD Card		
		MODULE,ETC	SMZY0014201	128MB MicroSD		
3	SSAD00	ADAPTOR,AC-DC	SSAD0021002	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021001	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021004	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021005	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021006	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021007	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE ,18pin plug		
3	WSAY00	SOFTWARE,APPLICATION	WSAY0067201	; , , ,EUROPE , ,		

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